WEEDS TREES and TURF

JUNE 1973

GOLF COURSE OUTLOOK FROM MONTANA TO TEXAS

COOL TOOL FOR SOD GROWERS

TVA's THREE DIMENSIONAL PROGRAM

SPECIAL REPORT

POA ANNUA CONTROL

5 YEAR TEST OF PREEMERGENCE HERBICIDES

VOYAGE TO THE WORLD'S LOWEST GOLF COURSE

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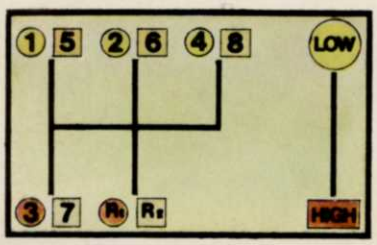

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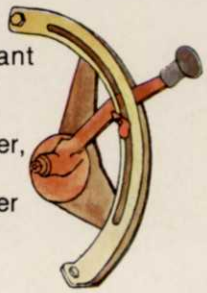

One convenient lever on the quadrant with an adjustable stop lets your operator raise, lower, adjust equipment on-the-go, for faster lawn maintenance and lawn renovation work.

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WEEDS TREES and TURF®

Volume 12, No. 6 June, 1973

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"Serving The Green Industry"

Large Tree Moving 10
The tree spade made it possible to move large trees. It became an instant success with arborists and landscape contractors. Douglas H. Ford, forester, and Lawrence E. Foote, director, office of environmental services, Department of Highways, St. Paul, Minn. discuss their experience in moving large trees. It's not all that easy, as they point out.

TVA's Three Dimensional Program 14
The Tennessee Valley Authority has developed a brush control program that is environmentally sound. Dorman C. Francisco of TVA tells how they use equipment, herbicides and landowner participation in keeping transmission rights-of-ways clear of weeds and brush.

Residual Control Of Annual Bluegrass With Preemergence Herbicides 16
Here's a special report to WTT readers by research agronomists F. V. Juska and J. J. Murray on the control of this weed pest in bentgrass.

West Central U.S. Golf Course Outlook 18
Construction marks the west central states. National Golf Foundation development constultant George Kerr looks at the situation and reports on the area's development.

A Golfing Oasis Below Sea Level 24
It there a golf course in hell? No one knows for sure, but the Furnace Creek Ranch Golf Course in Death Valley comes close. It's Located 278 feet below sea level. Warren Bidwell, superintendent, Congressional Country Club and Golf Course, tells of the heat, the beauty, the ruggedness and the utility of this lowest of all courses.

Best Tool Around For Sod Growers 27
Business records are vitally important to every sod grower. They tell the difference between profit and loss, success and failure, and provide the sod grower with an up to the minute pulse of the business. Robert K. Reynolds, farm management specialist at V.P.I. discusses what's needed in record keeping for the sod producer.

Editorial 6
Government News/Business 8
Green Industry Newsmakers 22
Sod Industry Section 27
Insect Report 38
Meeting Dates 52
Arborist Shop Talk 53
Industry People On The Move 56
Letters To The Editor 60
Advertiser's Index 60
Classifieds 61
Trimmings 62

The Cover

The oldest golf course in the world is located in Scotland, but the U.S. lays claim to the lowest golf course. Furnace Creek Ranch Golf Course is located 278 feet below sea level. This course is in Death Valley, California. Temperatures in the summer reach 134 degrees. Our cover shows the number ten green. For the exciting story of this course turn to page 24.

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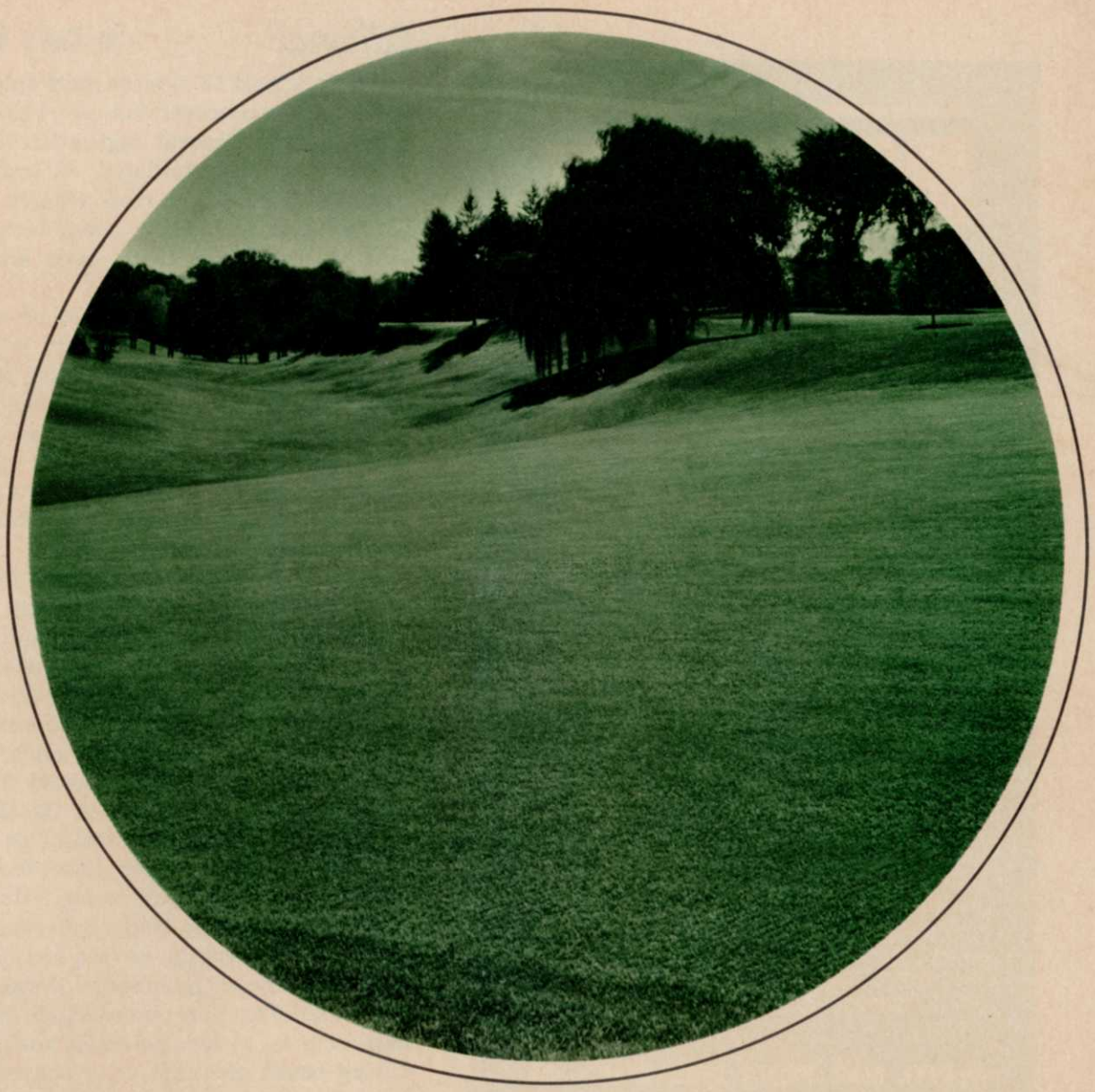

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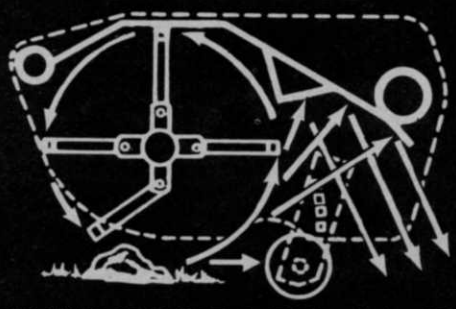

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Editorial It Can't Happen To Us

Within the past 12 months most trade associations have made a concentrated effort to educate members on new Federal legislation. More than 10 studies have been initiated. At least a half-dozen new standards which more clearly define certain jobs within the industry have been written. Several of these have even been accepted by the government as law.

Yet throughout this surge of activity, trade associations have done little to inform members of potential antitrust situations that inevitably hang over an assembly every time an association gathers. Indeed, some trade associations themselves are now under attack by the Justice Department and the Federal Trade Commission for practices which allegedly are thought to inhibit free business competition.

Association activities, however meaningful, are being scrutinized by government officials. Statistical reporting, membership requirements, membership disbarment, and others are only a few of the areas being probed by the government.

Ever since the great trust divestures of a few years ago, most individuals have developed an antitrust sensitivity level about 10 feet higher than the tallest aerial tower. On the other hand, there still exists among most of us a feeling that because we are smaller than the giant corporations "it can't happen to me." But it can.

Trade association leaders, because they represent the membership, have a heavy obligation to become aware of the inherent dangers of antitrust conditions. This may even include the retention of legal counsel to spot potential antitrust situations during board meetings or at conventions. We believe that these leaders also have the obligation of keeping members aware of what constitutes antitrust and what does not.

Most of us know the general areas that are unlawful to discuss. Division of markets, directly or indirectly; discussion of price; and, written standards that might exclude new businesses from competing are but a few. What is needed is a cleare interpretation of the gray areas.

The Justice Department has no specific guidelines to follow, yet this does not mean that the topic should be ignored. By its very nature, antitrust may be a reason for lack of interest in becoming a trade association member.

We believe one way to squelch these fears is through discussion. The antitrust topic should be openly presented at an association meeting with plently of time for questions and answers by knowledgeable persons. Only through this means can association members become better educated as to what violates antitrust and what consitutes a healthy competitive atmosphere.

Get rid of unwanted green growth before it cuts into your profits.

The weed onslaught is just about universal.

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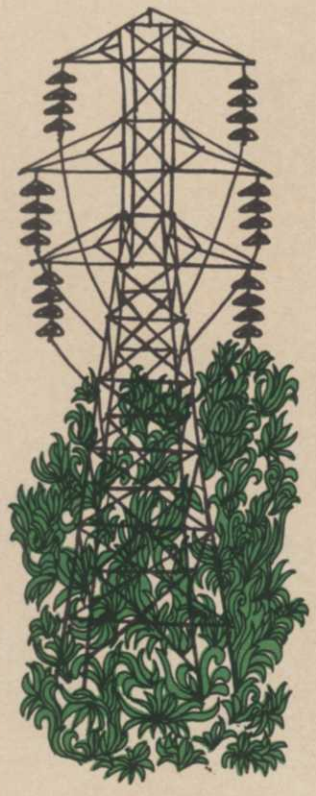

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Government News / Business

Changes in the Occupational Safety and Health Act (OSHA) under the sanitation section make the Law more workable by those affected. Ice in icewater can now be in contact with the water if the ice is made of potable (drinkable) water. Additionally, single occupancy toilet rooms that can be locked from the inside may be used by both sexes. This conforms to the restroom facilities on airplanes. Also eliminated from the original draft is the requirement that toilets and drinking water be within 200 feet of any place where employees regularly work.

Can you use unregistered pesticides in emergency situations? Proposed rules for Federal and state agencies would grant exemption to the new pesticide law under authority of the Environmental Protection Agency administrator. But only if the emergency situation warrants it. Three types of exemptions have been proposed: A specific exemption for situations involving a predictable or unpredictable outbreak of a pest in a specific situation; A quarantine-public health exemption for preventing the introduction or spread of a foreign pest (Exemption would be limited to one year, but could be renewed); A crisis exemption where the responsible official in authority determines that (1) no pesticide registered for the particular use is available and (2) the time factor is so critical that there is no time to request a specific exemption. (A suspended pesticide could not be used in a crisis exemption). EPA would require monitoring of the situation and follow-up reports.

Better get acquainted with the Consumer Protection Agency Bill (S 707). At presstime Senate hearings were in the final stages. Hearings in the House are scheduled to begin shortly. The Act could have major impact on the outdoor power equipment and recreational type products produced by manufacturers in the Green Industry. Industrial products may also be covered by the bill. While they appear to be covered only by OSHA, in reality it is conceivable that this bill could include them, too.

EPA is beginning to exercise authority over the distribution and sale of pesticide products within state boundaries. Under the Federal Environmental Pesticide Control Act (FEPCA) the Agency is requiring that all intrastate products containing DDT must be registered with EPA by June 10. EPA will then determine whether or not such products should continue to be sold. According to the regulation, all persons who distribute or offer for sale any pesticide containing DDT must apply for a Federal registration.

The Horticultural Spraymen's Association of Florida (HSAF) has become a full chapter of the Florida Nurserymen and Growers Association (FNGA), under the umbrella concept of FNGA. The new chapter currently has 78 members which will be added to the 1,825 nurserymen's membership. The joint announcement was made by Eugene Solomon HSAF president and Joseph Shaw, FNGA president.

Pickup truck fever is contagious. The Motor Vehicle Manufacturers Association, Detroit, reports steady new pickup truck sales increase from less than 500,000 in 1959 to 1.4 million units in 1972. Approximately 121,500 pickups were sold in January 1973.

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FIVE
YEARS
EXPERIENCE
IN MINNESOTA

LARGE TREE MOVING

By DOUGLAS H. FORD & LAWRENCE E. FOOTE
Forester and Director, respectively
Office of Environmental Services
Department of Highways
St. Paul, Minnesota

Spade-type digger (66 inch) developed in 1966 for large tree moving

OUR modern highways are a far cry from the dirt tracks and gravel lanes of the early nineteen-hundreds. Highway improvements, however, have meant disruption of the landscape and destruction of trees and woody shrubs. A concrete or asphalt strip fringed with grass is the usual result of this disruption.

To develop a desirable highway corridor, the roadside must be re-vegetated to blend into its surroundings. Nursery stock (trees 2 to 3 inches in diameter) is usually used to re-establish the missing woody vegetation.

However, nursery stock is considerably smaller than the surrounding, undisturbed, woody vegetation, and takes many years to grow to a size that has a noticeable, visual impact. The development of mechanical tree transplanting equipment in 1964 and 1966 provided an economical means of hastening the visual impact derived from landscaping materials. Now, an immediate effect can be gained by using larger tree stock, usually 4 to 8 inches in diameter.

The Minnesota Department of Highways initiated a large tree moving program in the fall of 1968. At that time, 179 Green Ash and Silver Maple were relocated (for safety reasons) from an expressway median to two interchanges, one at each end of the highway section involved.

Since this first project was completed, an additional 1,591 large trees and shrubs have been transplanted to 19 different locations.

Today, the Department is moving roughly 400 trees per year. Some of these trees are salvaged from new construction and regrading projects. Others are moved because they create problems or traffic hazards (reduced sight distances, too close to travel lanes, etc.). Most are moved for landscaping purposes, and come from such varied sources as old windbreaks, large tree nurseries, forest tree farms, and wooded portions of the highway right-of-way.

Forty-one different tree and shrub species have been moved to date (Table 1). Included in this total are early plant successional species such as Aspen and Willow, and large, tap-rooted trees such as the Oaks and Pines. More Green Ash and Spruce (both Black Hills and Colorado Green varieties) have been transplanted than any other species.

Statistical evaluations regarding plant survival are difficult to make because of the variable sample size involved. However, trend patterns can be pointed out. Of the 1,770 trees and shrubs moved to date, 1,646 individuals, or 93 percent, have survived. This survival rate is very good considering the size of these plants and their general lack of previous care.

This clam-type digger (72 inch) was developed in 1964 for large tree moving. Authors used clam- and spade-diggers in moving trees.

The high or low success with some of the species may be due to the relatively short time period during which we have been moving trees, and/or the small numbers moved. A longer evaluation period and larger sample size are needed to determine the long range effects of the transplanting technique on these species. As more specimens of satisfactory size and quality are located, they will be included in the program.

All survival evaluations were made in the fall of 1972. The evaluation included classifying the transplants according to the amount of

continued on page 20)

TABLE 1. Plant Survival By Species Moved

Species	Number Moved	Number Living	Percent Survival
Spruce (Picea glauca and P. pungens)	666	619	93
Green Ash (Fraxinus pennsylvanica)	358	351	98
Red Pine (Pinus resinosa)	209	197	94
Burr Oak (Quercus macrocarpa)	95	83	87
Aspen (Populus tremuloides and P. grandidenta)	82	69	84
Jack Pine (Pinus banksiana)	39	36	92
Sugar Maple (Acer saccharum)	32	30	94
White Birch (Betula papyrifera)	28	19	68
Eastern Larch (Larix laricina)	25	23	92
Red Maple (Acer rubrum)	21	18	86
Red Oak (Quercus rubra)	21	19	90
Honeylocust (Gleditsia triacanthos)	19	19	100
Silver Maple (Acer saccharinum)	18	18	100
Eastern Redcedar (Juniperous virginiana)	18	18	100
American Linden (Tilia americana)	16	16	100
American Elm (Ulmus americana	13	12	92
Pin Cherry (Prunus pennsylvanica)	12	7	58
Ironwood (Ostrya virginiana)	11	10	91
Apple (Malus spp.)	10	10	100
Willow (Salix spp.)	10	9	90
Crabapple (Malus spp.)	9	9	100
Wild Plum (Prunus americana)	9	9	100
Norway Maple (Acer platanoides)	7	6	86
Speckled Alder (Alnus rugosa)	6	6	100
Black Walnut (Juglans nigra)	6	5	83
Common Lilac (Syringa vulgaris)	5	5	100
Service Berry (Amelanchier alnifolia)	3	3	100
Honeysuckle (Lonicera spp.)	3	3	100
Austrian Pine (Pinus nigra)	3	3	100
Mountain Ash (Sorbus americana)	3	3	100
Hackberry (Celtis occidentalis)	2	2	100
Russian Olive (Elaeagnus angustifolia)	2	2	100
Pin Oak (Quercus palustris)	2	2	100
American Arborvitae (Thuja occidentalis)	2	1	50
Balsam Fir (Abies balsamea)	1	1	100
Ohio Buckeye (Aesculus glabra)	1	1	100
Hawthorn (Crataegus spp.)	1	1	100
Eastern White Pine (Pinus strobus)	1	1	100
Choke Cherry (Prunus virginiana)	1	0	0
Totals	1770	1646	93

[1] Fifty-one plants died and were removed before accurate size records were compiled.

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We keep getting better at our business to get more of your business.

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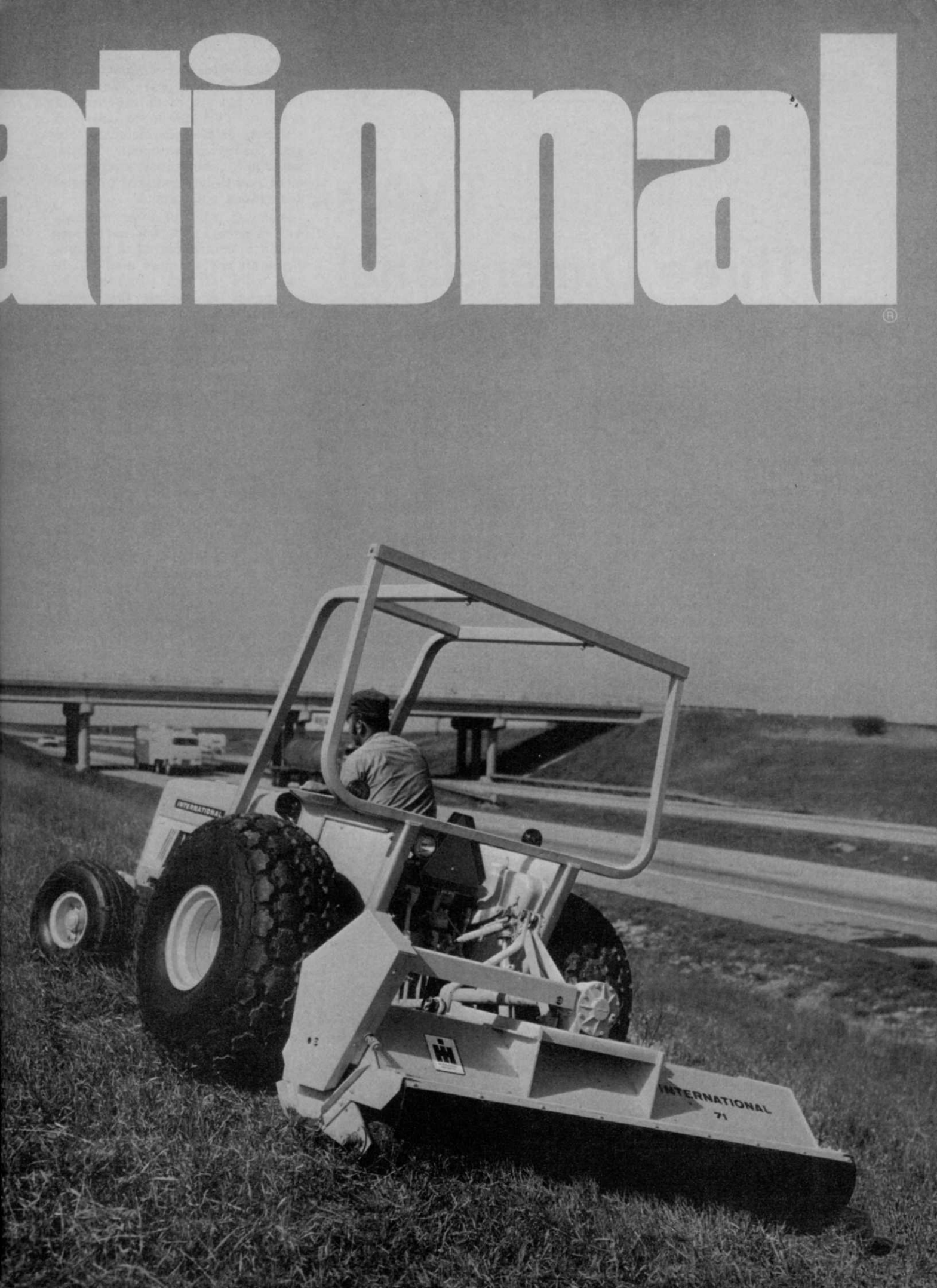


TVA's Three Dimensional Program

By DORMAN C. FRANCISCO
Tennessee Valley Authority
Chattanooga, Tennessee

THE Tennessee Valley Authority has approximately 17,000 miles of transmission lines that are routed through parts of seven states. About 60 percent of the transmission line right of ways are in areas that are visible to the public.

Brush control is a major and expensive recurring problem connected with the transmission of electric energy in the Tennessee Valley region because of the numerous species of brush and terrain, which varies from swamps and rolling uplands to high plateaus and rugged mountains.

The average annual rainfall is more than 50 inches, and the average annual temperature is above 60° F. These factors contribute to luxuriant growth of vegetation. The right of way width varies depending on the voltage and the number of circuits; however, the vast majority of right of ways are cleared 100 feet wide.

Chemical maintenance on TVA's right of ways began in 1949, and for the next six years hand clearing and power saws were gradually replaced by chemical methods. For two decades herbicides were used almost exclusively to control undesirable brush species on TVA's right of ways.

In addition to the scheduled maintenance program, extensive field testing and screening programs of new herbicides and combinations of proven herbicides were conducted. During this era of an all-chemical program, TVA developed and used a variety of methods including foliage handgun, automatic nozzle, helicopter, basal, initial stump treatment, and pellet treatment by aerial and ground applications.

Although each of these methods was effective, TVA was never successful in controlling all of the species with any of these methods. It was more or less a process of eliminaton of species that were susceptible to the herbicides that were used, and fortunately the resistant species that remained on the right of ways were primarily the slow-growing types.

By 1968 these resistant species had reached a height where they were beginning to be a hazard to the line; therefore, we turned our attention to mechanical methods. Another factor which influenced our change was the increasing general anxiety toward the use of herbicides, especially in highly residential areas, croplands, etc.

In 1968 TVA began to change from almost exclusively chemical methods to other methods which would not only be more desirable from an environmental standpoint but would also remove the resistant species that had remained on the right of ways in spite of repeated chemical applications.

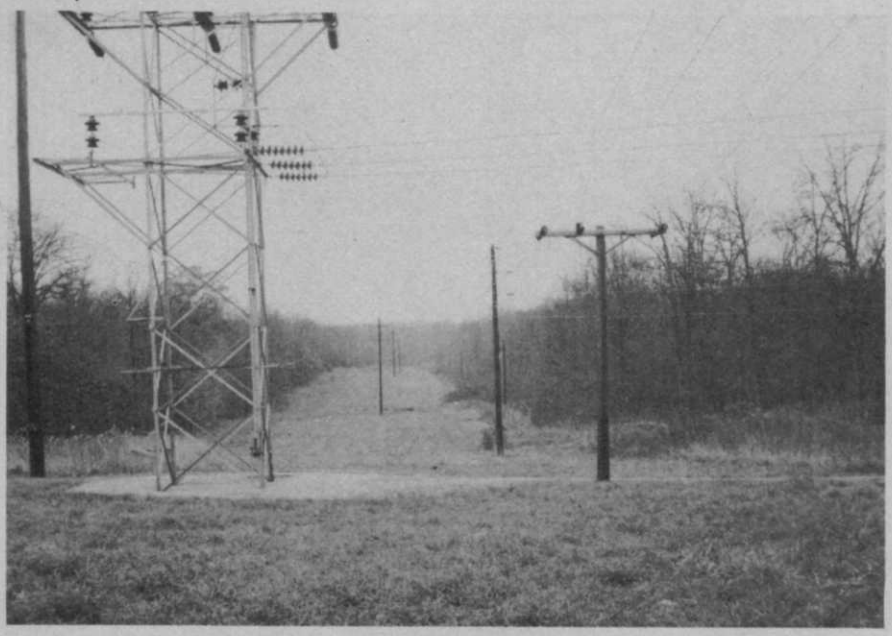
For the past two years 70 percent of our scheduled maintenance has been by mechanical methods with the greater part of the right of ways being mowed with large rotary-type machines and the remainder shear-cleared. Mechanical methods have been fully accepted by property owners and the general public. The other 30 percent of our scheduled maintenance is by various chemical methods.

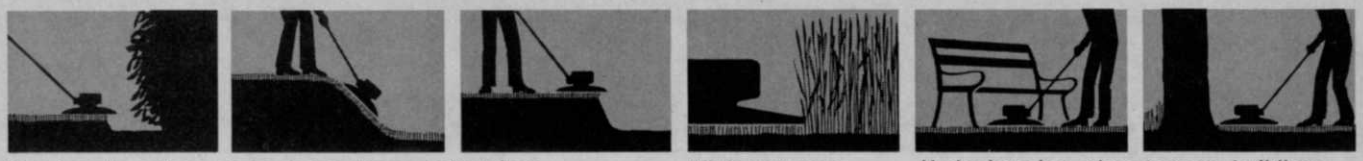
Our chemical maintenance is carefully planned, and its use is only in the more remote areas. Herbicides are not used near water sources, crops, or areas exposed to public view. Chemical maintenance is avoided also in areas where "brownout" would be visible from interstate or U.S. highways or heavily traveled state or county roads. TVA strictly regulates the use of herbicides and complies in all respects with the Department of Health, Education, and Welfare restrictions. Also each year TVA's chemical program is submitted to the President's Working Group on Pesticides for review and approval.

The major portion of ground

(continued on page 46)

A tractor-powered rotary cutter keeps this TVA power line right-of-way looking like a park.





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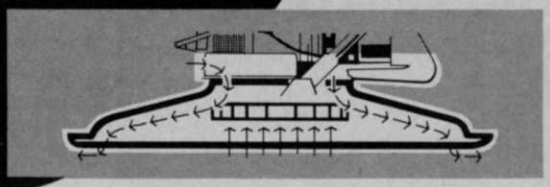

Riding on a controlled cushion of air, the Flymo mower cuts smoothly through the toughest jobs. In wet grass or dry, long or short, and on flat surfaces or steep inclines, Flymo maneuvers easily, trims clean and close.

In use on golf courses and institutional grounds throughout the world, and meeting with enthusiastic acceptance in the U.S., the job-proven Flymo cuts expensive hand trimming by gliding under bushes and benches, and by floating right up to trees and posts. Cutting height is adjustable from ½″ to more than 2½″.

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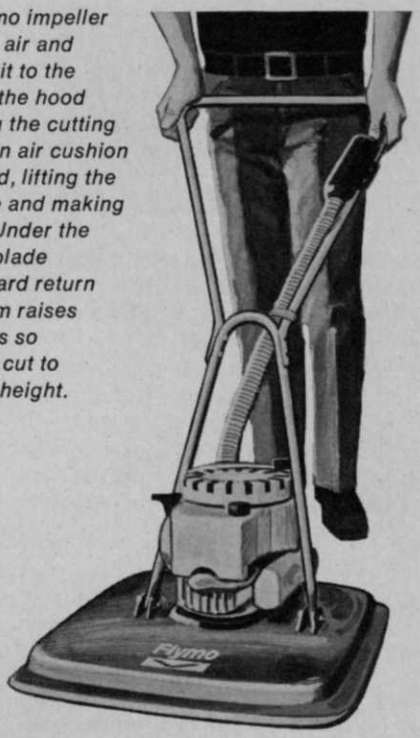

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WTT SPECIAL REPORT

Residual Control Of Annual Bluegrass With Preemergence Herbicides

By F. V. JUSKA and J. J. MURRAY*

ANNUAL BLUEGRASS *Poa annua* L., is a very serious weed which infests putting greens and other turfgrass areas *Poa annua* is a prolific seed producer during both fall and spring. Seed is produced under low cutting heights such as those required for bent- and bermudagrass putting greens and in low density turf. A good stand of *Poa annua*, obtained in the field and seeded in the greenhouse on the same day, showed that seed does not require the after-ripening process that is necessary for the germination of many other grasses.[5]

A study was initiated in 1965 to determine the phytotoxicity to bentgrass *Agrostis palustris* varieties from preemergence herbicides. The herbicide plots were 2½ feet by 55 feet and variety subplots within herbicide treatments were 2½ feet by 5 feet. Herbicides and rates used during a five-year period are given in Table 1.

This study was continued for three years after the last application of herbicides in 1969 to determine the residual control of *Poa annua* plants following the application of herbicides.

Except for Betasan bensulide herbicide (Table 2), some injury from all preemergence herbicides was noted in August of 1965-67[2]. Little or no injury was noted in 1968 through 1969. The greater injury from calcium arsenate was due to severe injury to C-52 (Old Orchard), and high rates applied at one time.

Griffin[1] reported that research results from Virginia Polytechnic Institute and State University showed a reduction of roots with an application of DCPA at five pounds (active ingredient) per acre and a greater reduction with Betasan at 15 pounds (active ingredient) per acre.

The percentage of *Poa annua* present for each preemergence herbicide treatment was averaged for 11 bentgrass varieties (Table 1) for 1965 through 1968 and 1972. Percentage of annual bluegrass was not recorded in 1969. Poor control was obtained (Table 1) for each treatment except for calcium arsenate and lead arsenate. Sprague and Burton[5] reported that lead arsenate applied to turf to control grubs greatly reduced, but did not eliminate annual bluegrass in bentgrass turf.

Two applications of two pounds of calcium arsenate per thousand square feet, two to three weeks apart in the spring and two to three applications at the same rate in the fall, will gradually remove annual bluegrass. It was the observation of Holman Griffin, mid-Atlantic director, USGA Green Section, Charlottesville, Va., that two or three years of this treatment in the Mid-Atlantic regions does not injure

(continued on page 48)

TABLE 1. Average percent of Poa annua present after treatment with preemergence herbicides on eleven bentgrass varieties*.

Herbicides** and rates	Aug. 1965	July 1966	Aug. 1967	Aug. 1968	April 1972
Betasan bensulide 15 lb. ai/A	10.0	14.1	21.0	13.4	15.0
Zytron DMPA 15 lb. ai/A	12.7	17.1	31.5	21.6	30.0
Calcium arsenate 69% ai 5 lb./1,000 ft.²	2.3	7.3	1.5	2.7	2.0
Control plot	13.2	10.9	22.5	27.0	30.0
Tupersan siduron 12 lb. ai/A	19.5	13.5	24.5	20.7	35.0
Lead arsenate 96% ai 5 lb./1,000 ft.²	6.8	7.0	2.0	8.6	5.0
Dacthal DCPA 10 lb. ai/A	9.5	12.3	19.0	16.6	20.0
Control plot	9.1	8.8	15.0	19.3	15.0

*The bentgrass plots were aerified and topdressed with sterilized soil in the spring and fall of each year.
**Herbicides were applied in May of each year (1965 through 1969).

TABLE 2. Injury of preemergence herbicides on bentgrass selections: average for 1965-1967.

	HERBICIDES AND RATES (a.i.)					
Varieties	Betasan Bensulide 15 lb./A	Zytron DMPA 15 lb./A	Tupersan Siduron 12 lb./A	Dacthal DCPA 10 lb./A	Calcium arsenate 5 lb./1,000 sq. ft.	Lead arsenate 5 lb./1,000 sq. ft.
Arlington	0	.8	.7	1.0	1.0	.17
Arlington Congressional	0	.3	.8	1.2	.3	0
C-52 (Old Orchard)	0	.8	.17	1.0	2.2	0
Cohansey	0	.7	.17	1.8	.7	.3
Collins	0	.8	1.3	1.2	.17	0
Congressional	0	.3	.3	.8	.7	0
Metropolitan	0	1.0	.8	1.0	1.7	0
Pennlu	0	1.3	.7	1.2	1.0	.17
Penncross	0	1.2	0	1.2	.8	.3
Seaside	0	1.3	1.7	1.5	1.2	.3
Washington	0	1.3	3.3	1.7	.3	0

Scores: 0 = (no apparent injury) to 10 = (severe injury).

*Research Agronomists
Turfgrass Laboratory
Plant Genetics and Germplasm Institute, Agricultural Research Service, USDA, Beltsville, Md.

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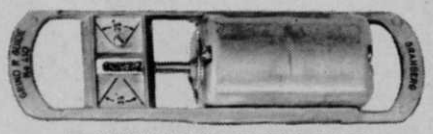

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Surge In Construction Marks West Central Golf Course Outlook

By GEORGE KERR
West Central Facility
Development Consultant
National Golf Foundation

George Kerr

THE PAST year was very slow by comparison with respect to official golf course openings in the West Central Region. Weather played a big part and usually at the wrong time. It was either too hot after planting with no moisture to assist irrigation systems, or it was too wet for the construction crews to move dirt with their machinery. As a result, our figures reflect the fact that only 24 courses opened in the NGF fiscal year, for this region.

It must be pointed out though that 1973 will be a banner year with respect to official golf course openings. At this time, there are 99 courses in some phase of construction between moving dirt and maturing turf prior to opening.

Of the 24 courses that opened, 20 were regulation length, one was of executive length and three were considered Par-3 facilities.

Texas is the leader on number of courses open during the past year with seven, while there are 35 facilities under construction. All but two of those under construction are considered in east or south Texas.

Colorado interests continue to build new golf layouts and it appears that several will be built in the mountains as soon as the weather permits. Mountain courses generally take longer to build because of the short season, but the vistas and panoramas available on a mountain course are truly worth waiting for.

One of the courses recently opened in the foothills of the Rockies at Larkspur, Colorado is Perry Park designed by Richard Phelps of Phelps-Brauer & Associates, Denver. Recently, superintendent John Ford hosted a most successful monthly meeting of the Rocky Mountain GCSA. John is now actively engaged in "bringing in" another nine holes, which should be ready for play next summer.

Another foothills course closer to Denver is Roxborough Park, designed by Robert Trent Jones, Jr. Superintendent Gordon Brinkworth was kept busy bringing in 18 holes of new turf until the snow arrived. The course winds through natural formations of rock and trees, and should be ready for play next summer.

The Pinery at Parker, Colorado is presently building 27 holes with Purr-Wick greens. David Bingaman designed the golf facility and is building it with Jack Maurer, superintendent. Both men have had prior experience with the Purr-Wick system. The Pinery is now owned by the Club Corporation of America.

All the aforementioned golf facilities have been designed to compliment the sale of real estate surrounding the golf course and adjacent environs.

Of the 35 courses under construction in Texas, almost 75 percent of these are because of real estate developments.

The Houston area is a fine exponent of real estate golf projects. Diamondhead Corporation is building "Newport," a 6000-acre resort type community on the east shore of Lake Houston. The master plan provides for three 18 hole courses, two marinas, riding stables, swim and tennis club, plus numerous other amenities.

The Kingwood Country Club will be built on the opposite or west

shore of Lake Houston. The Friendswood Development Company and the Club Corporation of America are cooperating in this venture. Joseph S. Finger, golf course architect from Houston, designed three 18 hole layouts for Kingwood. The club and its golf courses will be patterned after the highly successful Brookhaven Country Club in Dallas. The courses will be designed to play from 5500 yards to 7100 yards, all with pars of 72. The most difficult course will be reserved for men only. The middle course will be open to all players with handicaps of 20 or better. The third course will be open to all players with no handicap requirement. Several holes will front on Lake Houston.

The Folsom Investment Company of Dallas, Texas has taken on a new project which will be adjacent to the Preston Trails Country Club. This new multi-million dollar golf-real estate venture will be known as Bent Tree Country Club. Designer Desmond Muirhead is working with builder Keith Dewar in this development.

Last, but not least, several municipal projects are going strong. Jay Riviere of Houston, designed and built a second 18 holes for Dick Forester et al at Bear Creek on the west side of Houston. This course will be ready to play this spring, weather permitting.

The Richardson, Texas municipal golf course, which was five years in planning, should be ready to open this year. Leon Howard of Austin, Texas did the design work while the Gunderson's of Rapid City, South Dakota did the final two finishing phases of construction. "Buster" Creagh will be the head professional and Mike Lasoya is the Supt. in charge. R. B. Sherrill, City Manager, did a lot of legwork before this project got off the ground. He visited many of the more successful municipal golf operations as far away as Fairfax County, Virginia.

Because of the prior planning and incorporation of successful ideas, the Richardson Muni-facility is truly first class and will rate among the finest. The site is an old horse pasture with many established trees as high as 40 feet. Present clubhouse plans feature cart storage in the basement or lower level. All indicators point to a highly successful operation, as there is a definite need for more municipal golf facilities in the suburbs of a large metroplex such as Dallas — Fort Worth.

Dallas has recognized the need for additional municipal golf facilities and has incorporated needs and desires into a comprehensive Green Belt Program. Grover Keeton, supt. of special activities for the Parks and Recreation Dept. reflected that several golf courses are in the long range plans for the Green Belt and other areas.

Oklahoma City broke ground on a new 36 hole facility early this year. The Earlywine Park project will be a total recreational complex encompassing all forms of outdoor activities. Floyd Farley designed the golf courses for this new municipal park.

The South Suburban Recreational District will open a new 27 hole muni golf course early next summer. The SSRD is located in Littleton, Colorado a suburb of Denver. The facility, designed by Phelps-Brauer of Denver, will include 18 holes of regulation length play, plus a Par-3 nine. The course should be ready to open early this summer.

1973 promises to be an exciting year with many course openings and ground breaking ceremonies. Hopefully, this surge in construction will begin to accommodate golfers who flock to the links each year in ever increasing numbers □

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TABLE 2. Plant Survival By Size — Class Moved

Size Class (inches)	Number Moved	Number Living	Percent Survival	Root Ball Size Used
Shrubs	41	34	83	42 & 66
2	32	32	100	42
2½	55	55	100	42
3	371	363	98	42
3½	230	223	97	42
4	231	219	95	42 & 66
4½	137	136	99	66
5	145	136	94	66
5½	90	88	98	66
6	86	84	98	66
6½	81	79	98	66 & 72
7	66	58	88	66 & 72
7½	64	62	97	72
8	41	38	93	72
8½	22	20	91	72
9	15	10	67	72
9½	4	4	100	72
10	7	4	57	72
11	1	1	100	72
Unknown[1]	51	0	0	Unknown
TOTALS	1770	1646	93	.....

LARGE TREE MOVING

(from page 11)

crown dieback sustained by each plant. The results of this condition evaluation are:

Crown Condition	Plants Effected
0 to 25% dieback	82% of all transplants
25 to 75% dieback	11% of all transplants
Dead plants	7% of all transplants

Trees with crown dieback in excess of 75 percent were considered dead. The small amount of life remaining in these trees is insufficient for healthy growth and survival.

The middle classification (25 to 75% dieback) is especially important because of the temporary, adverse appearance of the trees. These trees do produce new crowns by sprouting along their main branches and trunk, but this crown redevelopment takes many years and requires constant thinning and shaping.

In spite of dieback, a 5-inch diameter transplant still has three to four times the crown volume and visual impact of comparably priced nursery trees 2 to 3 inches in diameter.

The trees which we have moved range in size from 2 to 11 inches in caliper (Table 2). The minimum root ball diameter for the various sizes of trees moved is based on standards set by the American Association of Nurserymen. We have, however, adjusted these A.A.N. standards to cover the mechanical transplanting of wild or semi-wild grown materials. These adjusted standards are:

Tree Trunk Caliper	Minimum Root Ball Diameter
2 to 3½ inches inclusive	42 inches
4 to 6 inches inclusive	66 inches
6½ to 8 inches inclusive	72 inches
all multi-stemmed plants	66 inches

Our best success has been achieved with trees in the 2 to 7½ size range. Trees above 7½ inches in diameter almost invariably develop considerable crown dieback. This is probably due to the disproportionate root system to crown volume ratio which results from the mechanical transplanting of this large a tree. Where optimum results are being sought, only trees under 8 inches in diameter should be transplanted.

We are constantly improving our specifications and special contract provisions to provide for better control of the general quality of our transplanting work. These specifications and special provisions are available to anyone upon request. The installation work we require includes: machine transplanting, staking and guying, removal of competing vegetation, a wood-chip mulch, and trimming to improve tree shape and compensate for root loss.

Post-installation work includes: weekly waterings, pest control work, and maintenance of the guying system and weed-free mulch areas. Both experience and experimentation have shown that of all of these requirements, the pruning and watering are the most critical steps in successful transplanting.

All transplants must have their live crowns reduced in direct proportion to the amount of roots that they lose during the digging operation. Improper or insufficient pruning results in massive crown dieback. Our experience has shown that 40 to 60 percent of a tree's crown must be removed in order to avoid this massive dieback.

Even with proper pruning, transplanting will still place most trees in a state of shock. When the trees are in shock, inadequate watering during the hot, dry, growing season will result in additional crown dieback. However, good growth can be maintained if water is applied in sufficient quantities on a regular schedule. Experimentation has shown that, in Minnesota, this watering involves supplying 100 gallons per tree per week during the two growing seasons following transplanting. One season of watering will reduce shock-induced dieback by 50 to 60 percent, but two seasons are needed to completely eliminate the problem.

Many factors must be considered when planning a tree transplanting project. These factors include soil type, rooting habit of the trees, slope of the ground, and susceptibility of tree species to destructive agents.

Mechanically, tree transplanting equipment operates best in sandy soils. However, sandy soil tends to fall away from the root system during transit to the planting site. Consequently, damage occurs to the root hairs, and this damage can kill the tree.

Trees are more difficult to dig out of heavier soils, but damage to the root system does not occur as readily. If trees must be dug from sandy soils, water should be applied to the root ball during the digging operation to plasticize the soil and keep it in the ball.

Soils at the tree source and the new planting site should be similar in texture. Complications can result if there is a significant difference between the soils at the two sites. When a tree is moved from a heavy soil to a sandy soil, water tends to

Massive crown dieback (50 to 75 percent) on 8-inch Burr Oak due to insufficient watering.

Six inch diameter Silver Maple three years after transplanting.

run away from the root ball. Conversely, water tends to run into the root ball when a tree is relocated from a sandy site to a site with heavy soils. In either case, drainage becomes a problem.

In the former case the newly transplanted tree is susceptible to drought, while in the latter situation the tree is subject to flooding. Both of these situations result in considerable crown dieback, and may even result in the death of the newly transplanted tree. It is, therefore, desirable to relocate a tree to the same soil classification as the one in which it was originally found growing.

Ground slope governs the operation and mobility of the mechanical diggers. Slopes in excess of 4 to 1 are too steep for most truck-mounted diggers. Since the digging equipment operates at right angles to the ground surface, the tree must be returned to the same angle of slope. A variation in slope between the tree source and planting sites will result in the trees being established in a non-vertical position, or in a position where part of the root ball is exposed to the elements.

At first, spade-type digging equipment appears poorly adapted to transplanting tap-rooted trees, such as Jack Pine. One assumes that most of the root system is located in the deeper reaches of the soil profile where the diameter of the spade-type digger is smallest.

Conversely, the shallow, lateral-rooted trees appear well suited to the spade-type diggers because a larger proportion of their root system is in the upper soil profile where the digger's diameter is greatest.

Actually, the reverse is true when dealing with wild grown or woods collected stock. A larger proportion

(continued on page 44)

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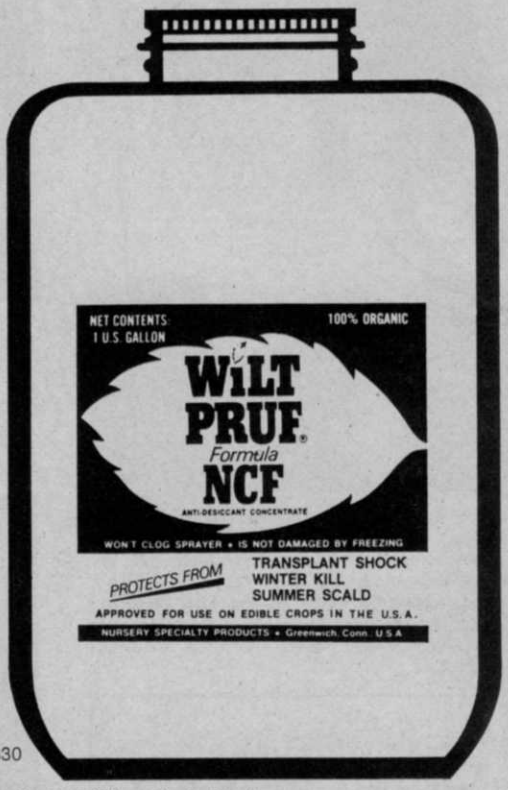

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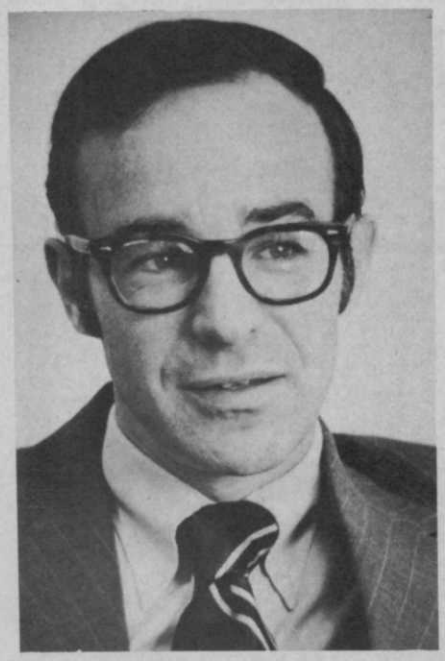


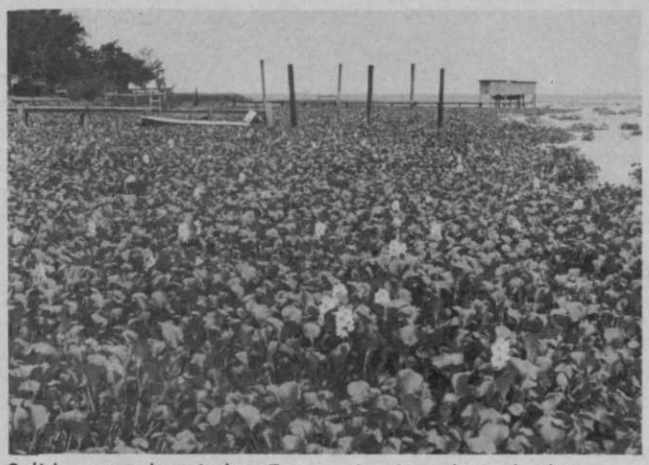
John R. Quarles, Jr. has been named Acting Deputy Administrator of the Environmental Protection Agency. He was appointed by Wm. D. Ruckelshaus, new Acting Director of the FBI. Quarles left the post of assistant administrator for Enforcement and General Counsel of EPA.

Here's the class who attended the University of Tennessee 4th annual one week winter short course in turfgrass management. Dr. Lloyd M. Callahan, associate professor, department of ornamental horticulture and landscape design conducted the course. Show (l-r, front row) are: Bruce Macdonald, Ben Green, Bill Fattat, Douglas Henley, Ken Stovall, Rex Pope; (second row) T. J. Nutt, Charles O'Donniley, Ray Scott, Jerry Hilycord, A. D. Cartwright, Jr., Jackie Christianson; (back row) James Farmer, John Watson, Ivan Tune, Billy Maxwell, Talmadge Shedd, and Dale McGahey. Not present is Jerry McKee.

Green Industry Newsmakers

PEOPLE PLACES EVENTS

New officers of the Mid-Atlantic Association of Golf Course Superintendents are: (l-r) Richard Silvar, Baltimore Country Club, Baltimore, Md., William Emerson, Eagles Nest Golf Course, Timonium, Md., Angelo Cammarota, Hobbits Glen Golf Course, Columbia, Md., Alex Watson, Sparrows Point Country Club, Baltimore, Md., Samuel Kessel, Country Club of Fairfax, Fairfax, Va., all board of directors; George Thompson, past president; Lee Dieter, Washington Golf and Country Club, president; George Cleaver, Golf Course Superintendents Association of America board member, J. Paul Barefoot, U.S. Soldiers Home, vice president; David Fairbank, Army-Navy Country Club, secretary-treasurer and Dennis McCammon, Springfield Golf and Country Club, Springfield, Va., board member.



Solid water hyacinths. Try navigating through this mess. That's the way the east bank of the St. Johns River looked about a year ago. Since that time, Corps of Engineers from the Jacksonville, Fla. District have brought this weed pest under control. Photo was taken in St. Johns county near Tacoi.

A new logo and name changes for several of its divisions are the latest from FMC Corporation. Bolens now becomes the Outdoor Power Equipment Division. Placing the new logo on this QT-16 tractor is C. F. Bartlett, general sales manager and D. L. Hill (r) division manager for Outdoor Power Equipment Division.

Hal Vogler and his sowing machine.

Here's a man who wants to put the germination percentages on your side, for a change. He's with the W. F. Miller Co., the Jacobsen Distributor in Birmingham, Michigan.

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A Golfing Oasis

WTT COVER STORY

By WARREN BIDWELL

Superintendent
Golf Course And Grounds
Congressional Country Club
Washington, D. C.

To be successful, both plant and man must work at survival

The desert bloom is an ordered period of beauty operating according to Nature's own special plan

COMPREHENSION of time in terms of billions of years is beyond the mental grasp of man. Yet, it is this kind of time that was necessary to form and shape such unusual areas as Death Valley, California, on the eastern border of the state not far from Las Vegas. Visible evidence indicates that the processes of Nature continue today.

We stood recently on the rugged peak overlooking that portion of the valley below known as the Devil's Golf Course. From this vantage point, properly named Dante's View, is the most ancient of all the rock formations that belong to the Pre-Cambrian Era of geologic time. This proved to be truly an awsome view, one very similar to those vista shots sent back to earth by our most recent Moon explorers. Like another famous geology area, Grand Canyon, Death Valley National Monument is represented by all of the geology Eras of the time scale of creation.

Furnace Creek Ranch Golf Course is a nine-hole course designed by William P. Bell. Twenty-five tons of annual ryegrass are used each fall to provide "green grass" for winter play.

Plant Life

Contrary to the opinion of the lost party of 49'ers, who happened into this barren land by mistake while on their way to the California gold fields, Death Valley, as they named it, is not without a wide range of plant and animal life. Even as late as 1922, reporters who were covering the famous character, Death Valley Scotty, referred to the 'Valley' as destitute of all vegetation.

Following the takeover of this unusual piece of geography by the National Park Service, creating present day Death Valley National Monument in 1933, botanists have recorded over six hundred species of plant life within the 3,000 square mile park boundary. This is in itself a most interesting story of plant survival in a rugged land.

The influence of elevation in this region is significant indeed, and accounts for the many extremes in temperature, moisture and variety of plant life found here. For instance, for each two hundred foot rise in elevation, an additional one inch of precipitation annually becomes available and a drop in temperature of one degree. With the lowest elevation of 282 feet below sea level and Telescope Peak towering directly opposite, standing at 11,049 feet

Below Sea Level

above sea level, it is understandable that a total range of plant life is possible.

Only the central salt flats near Badwater are totally barren of all plant life. On the outer edges of these salt flats, where the salinity runs six percent, Salt Grass and Pepperweed are able to survive. In total contrast, in the 8,000 to 11,000 foot climatic zone, Bristlecone Pine are found growing that were mere seedlings when Solomon was building the Temple in Jerusalem. At this elevation it is not unusual to encounter 20 foot snow drifts that close the few entry roads from the west which originated as winter storms over the Pacific.

Of the 600 species of plant life, 30 are of the grass family. Some of the tree forms like the Tamarisk and Date Palms used at the Furnace Creek Golf Course are naturalized-adapted for special purposes. Their use at the golf course and at the Inn are both psychological and practical. The waving of the tree tops during the warmer portion of the tourist season provides a sensation of cooling, a fringe benefit to man in his tailored world of leisure.

In the harsh environment here on the valley floor, the practical holds equal importance to the aesthetic. For instance, in the spring of '72, the strong winds that blow up the valley from down Mexico way almost covered the 13th fairway with drifting sand. Had not the southern border of the fairway been planted with a tight row of Tamarix, a far greater encroachment of the golf course fairways by the drifting sand would have been experienced.

The Date Palms have a similar application. They provide a sense of dignity to surroundings that depict harshness, reminding one of the unusual setting in which he seeks his recreation. The practical issue here is use of the dates by the baker at the Inn in putting his secret date-bread formula together for an eager clientele who patronize both the Inn and Furnace Creek Ranch, operated by the Fred Harvey organization.

Would you believe that this course is located 279 feet below sea level? Note the Tamarix and Date palm lining the fairways. Annual ryegrass is used all the way because of it's survival characteristics.

The Desert Life

The desert bloom is an ordered period of beauty, operating according to Nature's own special plan. Nowhere is the discipline of Nature more controlled than here in the desert. For here the balance of growth inhibitors and growth stimulators come into play.

Moisture and temperature at the time of germination of the 111 known species of annual flowers is the key factor. Those of us who deal with grass seedlings surely recognize the marvel and complexity of the seed. The role of the growth enzymes are truly fascinating. In the desert environment, they are in complete control.

Too little rain and the inhibitors are not leached out; the temperatures too cool and the stimulating enzymes are not triggered. However when Nature deems that everything is "right," the desert seeds that may have been waiting for a number of years germinate and come into bloom.

We noted such a vast germination during November while experiencing unusual amounts of rainfall. Indeed, Nature seemed tuned-in and heading for a record spring bloom. To return again in spring to witness the beauty in this rugged setting would be delightful indeed.

The Devil's Golf Course

My interest in a visit to Death Valley was three-fold: the geological wonder of it all; the photographic challenge that I knew existed, and the intriguing story, as told by a friend, that an 18 hole golf course existed here at 215 feet below sea level, growing real live grass on an ancient sea bed so saline at some points that grass cannot survive.

The other, an imaginary 'golf course' is affectionally known as The Devil's Golf Course and is so indicated on all of the official Death Valley National Monument maps.

No grass grows here.

The location is at Badwater, 282 feet below sea level; truly a briny no man's land, a total desolation for nothing grows.

The salt crystals that thrust up and crack open are responsible for the geological misnomer, thus the name of Devil's Golf Course; and all rough, totally impossible for plant growth and shot making.

This has only one similarity to the real golf course at Furnace Creek Ranch; both are located on ancient sea beds, but this one is spread over an area of 200 square miles where surface temperatures soar to 190 degrees, leaving it the most lifeless of any known location on our planet.

At Furnace Creek Ranch Golf

(Continued on page 34)

You're Invited

AMERICAN SOD PRODUCERS ASSOCIATION SUMMER MEETING and FIELD DAY

July 16-19
Denver, Colorado

ALL SOD GROWERS ARE INVITED

ASPA members extend a special invitation to all sod growers to join them in a major Rocky Mountain event hosted by the Rocky Mountain Sod Growers.

ASPA '73 Officer Team: left to right, Kidwell, Habenicht, Nunes, Bosgraph, Brouwer, and Davis.

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Hosted by: the Rocky Mountain Sod Growers

Featuring:

Registration: July 16 from 1.00-8:00 p.m. followed by a host reception at the Holiday Inn, Southeast.

Plus: tours of sod operations, sod installation, turfgrass research, plant environmental research, water resource development, and the Air Force Academy.

And: an all-day field day demonstration of sod production and handling equipment.

Annual Meeting Headquarters: Holiday Inn, Southeast, Denver, Colo.

American Sod Producers Association

Call or write: Dr. Henry Indyk, Executive Secretary, P.O. Box 231, New Brunswick, N.J. 08903. Tel. (201) 247-1766, Ext. 1453

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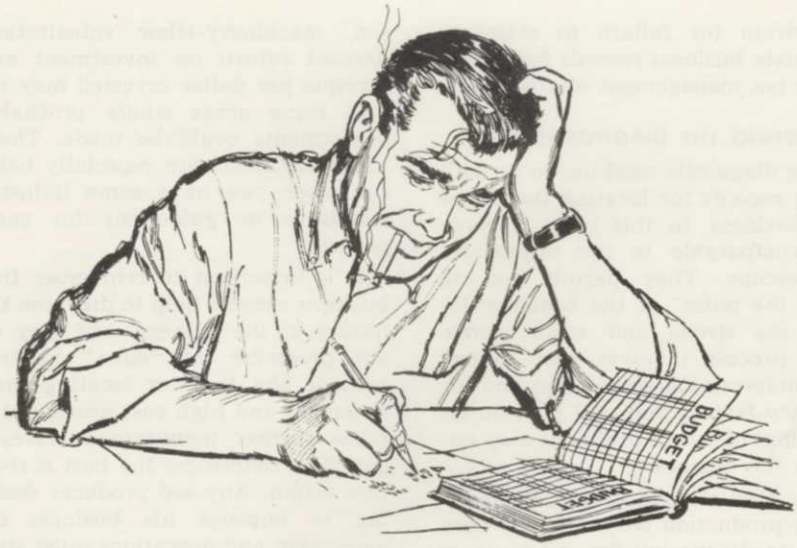

Business Records Best Tool Around For Sod Growers

By ROBERT K. REYNOLDS
Extension Specialist
Farm Management
Virginia Polytechnic Institute
and State University

HOW IMPORTANT is management to success in the sod business? You will probably agree that financial success is unlikely if poor management exists.

What influences the level of management? Well, there are undoubtedly a number of personal characteristics of the manager, such as experience, ability and attitudes, that have an affect on management performance. However, assuming the manager has the personal characteristics to permit good management, the level of management necessary for business success may not be attainable simply because he does not have the necessary tools with which to work.

Could you overhaul a tractor without using tools? That's a silly question—but it's just as silly to try to manage your business without using the tools available to you.

Good business records are the basic tools of management. Without them, critical limitations are placed on management and, consequently, on financial success.

The sod business is no different from any other business when it comes to keeping and using business records. The sod producer often finds himself in that same type of "cost-price squeeze" experienced by other businesses which without sound management, may subsequently result in business failure.

The beginner in the sod business or the sod grower who is expanding his operation has the additional problem of sustaining rather heavy accumulated costs before receiving any offsetting income. The nature of the business is such that a somewhat lengthy cost-incurring period of time may be necessary before obtaining a salable product. This amplifies the importance of sound financial planning to which business records can make a significant contribution.

Most sod producers will say that records are good. But what real value can be forthcoming from keeping business records? There is little or no return for the time expended in record-keeping if they are not accurate, complete and, most important, used.

Concerning the usefulness of records, there are several basic needs that records should fulfill if they are to contribute to the management of the business. These needs may be classified in the following categories:

A. the **service** need
B. the **diagnostic** need
C. the **credit** need

(continued)

TRIAL BALANCE
Year-Ended 12/31/7-

Account Number	Account Description	Cash Disbursements	Sal
100	Cash on hand		
101	Cash in bank		
102	Accts. Receivable		
110	Est. Uncollected Acct.		
115	Notes receivable		
120	Inventory-growing sod		
121	Inventory-cut sod		
122	Inventory-supplies		
130	Prepaid insurance		
131	Cash value life Ins.		
132	Misc. prepaid items		
150	Land		
151	Land improvements		
151A	Land Improvements-Amort.		
152	Leasehold		
153	Building		
153A	Building-Depreciation		
154	Mach. & Equipment		
154A	Mach. & Equip. Dep.		
155	Autos & Trucks		
155A	Autos & Trucks Dep.		
156	Office Furniture		
156A	Office Furniture Dep.		
200	Accts. Payable		
201	Notes Payable		
210	Accrued expense		
211	Sales Tax payable		
213	Real Estate Tax		
220	Withholding Tax		
221	FICA Tax		
222	Other Payroll Withholding		
223	Unemployment Tax		
250	Income Tax-Federal		
251	Income Tax-State		
252	Income Tax-City		
275	Long Term debt		
280	Capital Invested		
281	Paid in surplus		
282	Withdrawals		
283	Dividends		
284	Earnings-prior period		
285	Earnings-current period		
SALES			
	Retail Sales-Sod		
2401	Meriod		
2402	Flyking		
2403	Creeping Bent		
2404	Kentucky Blue		
	Wholesale Sales-Sod		
2401	Meriod		
2402	Flyking		
2403	Creeping Bent		

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MEETING THE SERVICE NEED

This category is the most obvious and the one for which sod growers recognize they need some records of some kind. This need involves using record information for completing tax forms, for meeting the increasing number of labor record requirements, and for other reports that are solicited from time to time.

Many sod growers overpay their taxes simply because they do not keep a complete account of income and expenses. Sales may be recalled fairly accurately since they are usually seasonal and for relatively large amounts. However, many expenses are scattered throughout the year and are often overlooked.

Tax planning is an important function of management. Often the shifting of income or expenses, through delaying or in some cases expediting business transactions, from one tax period to another can significantly reduce the tax liability. Also, choosing the appropriate depreciation treatment for depreciable assets, based on the tax position of the business, can affect the short and long-run tax burden. Considerable tax savings may be going down the drain for failure to maintain adequate business records for evaluating tax management alternatives.

MEETING THE DIAGNOSTIC NEED

The **diagnostic** need has to do with using records for locating the ills of the business. In this sense, records are comparable to the physician's stethescope. They permit you to "feel the pulse" of the business, locate the strong and weak points. This process involves cost control and determining production and efficiency factors that will provide indications of where problems may exist in the business.

The first step, of course, is identifying production costs. This is very basic to diagnosing the sod business or any business for that matter. The cost per square yard of sod has a primary bearing on sale price.

To take steps to reduce cost, you need to know what comprises total cost; which costs vary with volume of production and which costs do not (fixed costs). Efforts to reduce the cost item that makes up only 5% of the total cost is hardly worth it, but efforts to significantly reduce the cost item that comprises ⅓ of total cost may pay off very handsomely.

Thus, to determine where to apply cost management efforts for the greatest favorable influence on success, you need to know your costs, and records are an essential tool for meeting this need.

Not only is it important to identify total costs, it is also helpful to classify them as to sod establishment, maintenance and harvest costs. If your sod operation includes installation and delivery, the costs associated with these activities should be delineated.

Labor, machinery and capital efficiency measures can be obtained from record information. Such factors as acres of sod per man, maintenance machinery cost per acre of sod maintained, harvest machinery cost per square yard of harvested sod, machinery-labor substitution, percent return on investment and receipts per dollar invested may reveal some areas where profitable adjustments could be made. These kinds of factors are especially helpful when you have some industry standards or guidelines for comparison.

It is important to remember that business records help to diagnose the nature of the "illness" but they do not prescribe the "cure." Records provide the tool for locating inefficiencies and high cost areas, but it takes further management investigation to determine the best corrective action. Any sod producer desiring to improve his business organization and operations must start by analyzing past performance, and business records provide the tool for this analysis.

Business success hinges also on management's ability to plan ahead. Forward planning can often be strengthened by referring to what has occurred in the past. Knowledge of past business performance, available from business records, will provide a basis for budgeting future business transactions.

MEETING THE CREDIT NEED

The **credit** need which business records should fulfill has gained in importance in recent years. The increasing capital requirements and related major role of credit in the sod production business require managers to keep a close surveillance on the financial position of their operation. This phase of management is sometimes called financial manangement and involves using business records for preparing profit or loss, net worth and cash flow statements.

The proift or loss statement, in addition to showing the earnings of the business for a particular **period of time,** reveals the amount of cash generated by the business to repay old debt, to meet living expenses and to make new investment. This statement will provide clues concerning cost control but may not fully meet the needs for determining where inefficiencies exist within the business.

The net worth statement or balance sheet consists of assets, liabilities and net worth, and provides a picture of the financial position of the business as of a particular **point or date in time.**

Thus, the net worth statement presents a "snapshot" of the business whereas the profit or loss statement presents a "movie" of the

(continued on page 30)

Drainage or irrigation pipe, major plantings, and grading are routine for the smallest John Deere Backhoe Loader. Like larger John Deere units, it has:

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BUSINESS RECORDS
(from page 28)

business.

The net worth statement indicates the value of assets that would remain if the business was liquidated and all outside claims against it were paid.

The profit or loss statement and net worth statement provide valuable information for preparing ratios that will test the liquidity, solvency and profitability of the business. These measures are important to both borrower and lender when evaluating the acquisition of capital.

The current liabilities section of a net worth statement will show the obligations due within the next twelve months. The profit or loss statement will indicate the success of the business in generating funds to meet these obligations.

The cash flow statement shows the cash in and out of the business by specified periods of time and may be referred to as a calendar with receipts and expenses plotted on it. It includes, in addition to ordinary cash income and expenses, payment on current debts. The cash flow provides a pattern of the flow of business transactions and it will help to avoid financial disaster resulting from poor scheduling of debt repayment.

A word of caution—**if a diagnosis of your sod business suggests some adjustments, beware of the implications the adjustments might have on the business cash flow.** This word of caution is especially important if the adjustments to be made involve the use of much borrowed capital.

If you agree that management has a major influence on success in the sod business, why not give it the appropriate business records to work with? When you hire employees you are expected to provide them with the tools to do the job for which they were employed. Management, likewise, must have tools to do its job, and a good set of business records is first on the list.

Review your present system of business records and, if it does not meet the three basic needs, take the necessary steps to "get with it" so that management will have the tools to perform effectively—before it's too late!

Take a look at the newly developed ASPA "Chart of Accounts" system. This may be the answer to your business record woes. Also, check out the various record systems available through the Land Grant University in your state. These can usually be obtained through your local extension service agent.

If the manager's tool kit does not contain his potentially most valuable tool—an appropriate and well maintained business records system—the quality of the management job and the profit from his business are bound to suffer. Can any sod producer afford to be without this tool? □

Three Day Summer Meeting Set By ASPA For July

Sod producers and commercial suppliers of the sod industry will be converging upon Denver, Colorado on July 16 for the annual summer meeting and field day of the American Sod Producers Association.

The three-day event — beginning with registration on the evening of July 16 and concluding with the field demonstration of sod equipment on July 19 — is expected to attract a record attendance from within as well as outside the United States.

The host organization, the Rocky
(continued on page 36)

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Wheel Horse offers you a choice of 11 garden tractor models, ranging from 8 to 18 HP for 1973...backed with 25 years of experienced craftsmanship. Wheel Horse offers six automatic and five standard transmission models. See your service-oriented Wheel Horse dealer today. He's listed in the Yellow Pages under "lawn mowers." Write for your free copy of our new 1973 catalog.

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1973 will be a bad year for bugs.

Bad for bugs of turf and ornamental plants. And bad for household and structural bugs. Because Dow has a pair of insecticides that will make their lives miserable. There's ZECTRAN* insecticide, a general use biodegradable insect killer that works on almost all major foliage-feeding insect pests—even the hard-to-kill kinds. Use ZECTRAN on over 600 different flowers, ground covers, trees, shrubs and turf. And then there's DURSBAN* insecticide. Its effectiveness, economy, non-phytotoxicity and biodegradability make it the choice of professional turf men for golf greens, turf farms, home and

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industrial lawns—or wherever grass and ornamentals are grown. It's especially effective to control the hairy chinch bug and sod webworm. DURSBAN insecticide is also preferred by PCO's for controlling household and structural pests—especially resistant roaches that laugh at other sprays. Please remember to read and observe all precautions on the product label. Bugs, get ready for 1973!

*Trademark of The Dow Chemical Company

DOW*

DOW CHEMICAL U.S.A.

For More Details Circle (126) on Reply Card

With the advent of hot, spring winds, Bermudagrass comes alive for April and early May play. There is no summer play because temperatures daily climb up to 134 degrees.

GOLFING OASIS

(from page 25)

Course there are many challenges. One would expect this. Opened for play in the late twenties as a nine hole links, it was expanded to eighteen in 1967 by William P. Bell, well known west coast golf architect. Manual fairway irrigation replaced the former flooding type of water application. Bell carefully selected tree forms that would provide a green oasis atmosphere in this desert environment. Although playing only 5800 yards, the country mile shot does not come so easy as on conventional layouts—below sea level atmosphere, you know.

The Environment

What kind of grass grows where the temperature of 134 degrees last summer equaled the all time high established in 1913; where the humidity at the same time was at zero, and the ground temperature one inch below soil level was 209 degrees?

Bermuda is the answer for this location in the hot months which cover the greater span of the calendar.

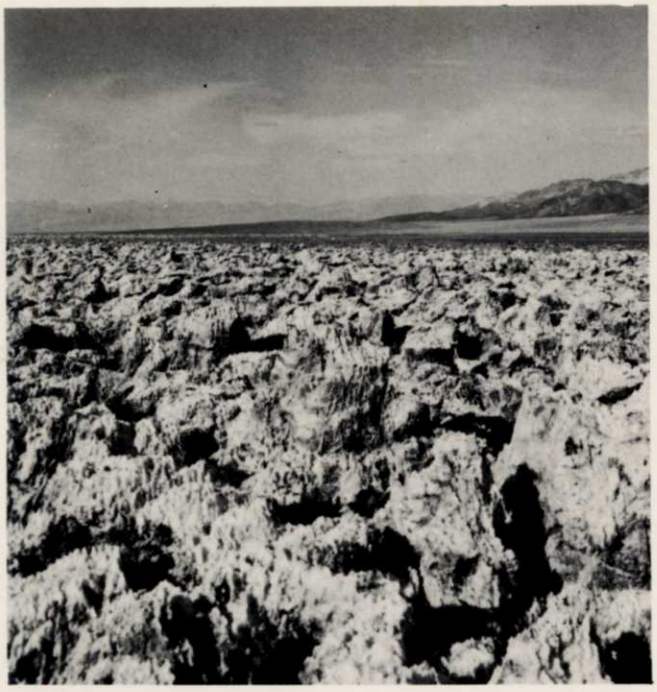
Naturally no one plays golf during the peak of summer. Man seeks his recreation here only during the season known as winter outside the valley, the period of November 1st through May 1st, truly a delightful time in the valley.

For early fall and spring growth, 25 tons of annual ryegrass are sown. This converts the playing areas of tees, greens and fairways to a pleasing facility that is indeed inviting to the patrons. By late April as the warm winds blow up from the open desert areas of the south, the Bermuda makes a comeback and continues through the remainder of the year.

Problems

Paul Woidtke, a GCSAA Scholarship winner at Penn State Turf School last March wanted a western location for his first position as golf course superintendent. He elected to try his hand in this hell hole on the

(Continued on page 40)



This is Devil's Golf Course. Looking much like the pictures taken on the moon, this area represents part of the most ancient of all the rock formations of the Pre-Cambrian Era.

This view of Death Valley is only a short distance from Furnace Creek Ranch Golf Course. Note the saltbushes whose roots radiate 30 feet to gather sufficient moisture.

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For example, 200 acres of grassed median in Pennsylvania were treated with MAINTAIN early last spring, just after the first mowing. The grass was cut once more before Labor Day, and that was it. MAINTAIN saved the State Department of Transportation approximately 5 mowings that year.

What's more, MAINTAIN works on trees, shrubs and vines as well as grasses.

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At Washington National Airport in Washington, D.C., MAINTAIN was used on a dangerously steep bank between two levels of the airport. MAINTAIN saved the maintenance department 5 mowings, and the chance of injuries was reduced immeasurably because the equipment was not used as often.

Of course, the best way to find out what MAINTAIN can do for you is to try it. And the best way to do that is to get in touch with your U.S. Borax distributor or your nearest U.S. Borax office:

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ASPA SUMMER MEETING
(from page 30)

Mountain Sod Growers Association has been devoting a great deal of effort and time in preparation of what should prove to be an outstanding and very meaningful event.

The modern and sprawling Richlawn Turf Farms will be the host site for the field day activities. Holiday Inn, Southeast, will serve as the headquarters and lodging facility.

The program will include a wide range of activities which should appeal to a wide range of interests. During registration on the evening of July 16, those in attendance will be welcomed to Colorado with a reception hosted by the Rocky Mountain Sod Growers Association.

The following three days will be bustling with activity that will include an educational program, organized bus tours and a field day.

Included in the educational program will be a discussion on accounting by Mr. R. K. Reynolds, Farm Management Specialist at VPI; use of the accounting forms in the ASPA Accounting System by a representative of Reynolds and Reynolds Company; labor relations, OSHA and other legislative issues of concern to sod producers by William Harding of a legal firm recognized for their competency in such matters; new developments in determining seed quality by Paul Florence, actively engaged as a seed broker as well as a sod producer, and the importance of nematodes in turfgrasses by a recognized nematologist.

Dr. Jack Butler, Extension Specialist in Turf at Colorado State University, will discuss the Colorado Sod Industry at the annual banquet on July 18.

Organized bus tours will highlight many points of interest to sod producers. A half-day tour during the afternoon of July 17 will be conducted to the U. S. Air Force Academy and West Turf Farms.

On the following day, an all-day tour will be conducted to Colorado State University at Ft. Collins. Highlights featured on this tour will be water resource development, water and its uses in the arid West, plant environmental research and turfgrass research. The annual business meeting will be held immediately following lunch. The day's activities will be concluded with the annual banquet.

Activities on July 19 will begin with an early morning tour to observe a Richlawn sod installation complete from soil preparation to the final service call. Activities for the remainder of the day will be centered at the sprawling Richlawn Turf Farm. Suppliers of products and equipment essential to the sod industry will exhibit and field demonstrate the newest and latest equipment and products. The field day activities will provide an excellent opportunity for an update on new developments as well as see equipment in action under field conditions.

Aside from the planned activities, Colorado offers unlimited opportunities for sight-seeing. The beauty of Colorado and the ASPA program for the summer meeting will provide a mid-season break that could prove to be exceptionally enjoyable and educational. Printed programs with complete details are available from Dr. Henry W. Indyk, Executive Secretary, P. O. Box 231, College of Agriculture and Environmental Science, New Brunswick, New Jersey 08903.

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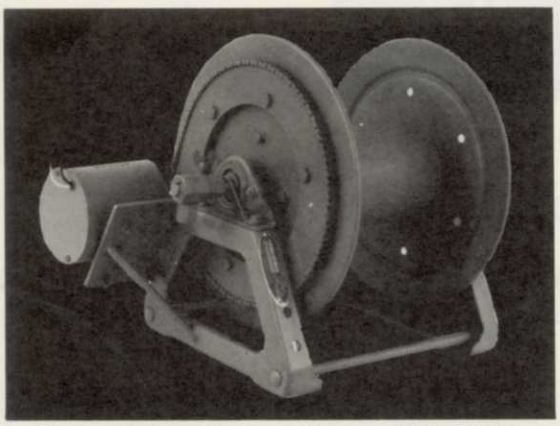

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—insect report—

INSECTS OF ORNAMENTALS

ARMORED SCALES

FLORIDA: Adults of *Lepidosaphes maskelli* and *Carulaspis minima* moderate on 2,000 *Juniperus* sp. plants at Hudson, Pasco County. All stages of *Duplaspidiotus tesseratus* and MINING SCALE (Howardia biclavis) collected on *Camellia japonica* at Arcadia, De Soto County. These are all new county records.

AMERICAN COCKROACH
(Periplaneta americana)

GEORGIA: Severely damaged bark of poinsettia and kalanchoe plants in Spalding County greenhouse.

DIASPIDID SCALE
(Morganella cueroensis)

FLORIDA: Adults heavily infested *Myrica cerifera* (wax myrtle) growing in deep shade at Yeehaw Junction, Osceola County. This is a new county record.

BAGWORM
(Thyridopteryx ephemeraeformis)

ALABAMA: About 50 percent of eggs hatched on trees and shrubs examined along Highway I-85 in Lee, Macon, and Montgomery Counties. First instar larvae very heavy on Juniper and cedars; expected to destroy plants.

TREE INSECTS

PINE SAWFLY
(Neodiprion taedae linearis)

ARKANSAS: Hatch began in south-central counties about 2 and one half weeks later than normal.

EASTERN TENT CATERPILLAR
(Malacosoma americanum)

NEW JERSEY: First hatch of season observed in crab apple trees at New Brunswick, Middlesex County. Few larvae observed on each egg mass. MARYLAND: First larvae of season reported from Montgomery County. Most egg hatch expected to be completed in 7-14 days in central area. SOUTH CAROLINA: Larvae moderate to severe in most central and Piedmont counties. FLORIDA: Larvae abandoning most tents in *Prunus* spp. in search of pupation sites at Gainesville, Alachua County. ARKANSAS: Heavier in southern area than for many years.

FOREST TENT CATERPILLAR
(Malacosoma disstria)

TEXAS: Severe damage to oaks and other trees reported in Matagorda, Calhoun, and Colorado Counties. Some trees completely defoliated in area.

ELM SPANWORM
(Ennomos subsignarius)

CONNECTICUT: Due to an egg parasite *Ooencyrtus clisiocampae* (an encyrtid wasp) this defoliator not expected to be problem except for few localized infestations.

BENEFICIAL INSECTS

EULOPHID WASP
(Coccophagus albicoxa)

COLORADO: Parasitized and unspecified scale insect infesting *Arceuthobium cyanocarpum* (a mistletoe) which in turn was parasitizing *Pinus flexilis* (limber pine) about 18 miles west of Fort Collins, Larimer County, at about 7,700 feet elevation. This is a new State record.

CONVERGENT LADY BEETLE
(Hippodamia convergens)

OKLAHOMA: This species and *Nabis* spp. (damsel bugs) increased in alfalfa in west-central area; *H. convergens* still light in McCurtain County alfalfa.

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For more information: Contact Brandt G. Watson, President
Naples Mosquito District, Box 725
Naples, Fla. 33940

Headquarters for Meeting: Monteleone Hotel
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GOLFING OASIS
(from page 34)

face of this planet.

To be successful, both plant and man must work at survival.

Above all, both must be adaptable.

The desert is unbending. "Once we sow the ryegrass, it would seem that the migrating birds appear from everywhere by the many thousands." This is understandable because this is the only oasis within hundreds of miles.

Many of the birds, like the paying patrons, elect to remain all winter. With a fresh water reservoir that is continually replenished from springs located in the mountain canyons 16 miles away, the birds, especially the coots, do remain and become a continuing problem by constantly drilling holes in the putting surface looking for insect food or sprouting seed.

"We have many other problems", Paul reports. "Coyotes often dig holes around the cups out of sheer curiosity in attempting to find out what is in the hole. The riding stable horses tear down the paddock to reach the green grass that they can smell." Occassionally rattle snakes crawl in from the desert seeking relief from the heat.

"Just don't put your hand into any high grass areas, it could get you in trouble," he says. How much water is necessary seemed a logical question. "Too much water is lost in mid-air if we irrigate during the daylight hours, Paul notes. With only the golf course demands to meet it is just possible to get through the heat of the summer. The Bermuda is allowed to grow long and often cattle are brought in to graze until October 1st. Then the preparation for the winter season begins.

"We can supply 1200 gallons per minute to our sprinkler heads," he says. "During the 'season' we are careful to use only a 30-1-0 fertilizer for growth stimulation and avoid any addition to the salinity content of the soil, irrigating only for immediate use."

Curious as to whether the famous weed-grass, Poa Annua, could be found surviving in this high temperature environment, we searched in the longer grass near the compost heap and, sure enough, there it was about ready to bloom.

I suppose a specimen plant should be forwarded to the Park Naturalist just to make sure it was not left out of the total count of the 600 plant species recorded. Perhaps they don't know of its existence. Ask almost any golf course superintendent! □

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Boston Tree Party Of ISTC Slated For Aug. 12-16.

Late summer in New England will beckon arborists across the U.S. when the International Shade Tree Conference holds its 49th convention in Boston in August.

Dates of the meeting are August 12-16. A pre-convention meeting of chapter presidents and past presidents will begin on August 11.

Official opening is slated for early Monday morning. This will be followed by an introduction to the Arnold Arboretum by Dr. Richard A. Howard, director.

Hyland R. Johns, Jr., Asplundh Tree Expert Co., will review the new pesticides applicator regulations. Methods of erosion control using wood chips and native plant material will be presented by Joseph L. Beasley, highway landscape supervisor, Massachusetts department of public works.

Dr. John W. Andresen, department of forestry, Southern Illinois University, Carbondale, Ill., will speak on the status of research in the shade tree industry. He will be followed by Dr. Gordon King, arboriculture department, University of Mass. who will discuss tree care in Europe.

The second day will be devoted to touring the Arnold Arboretum and field demonstrations by exhibitors.

The Wednesday session will be divided into three groups, utility arboriculture, municipal arboriculture and commercial arboriculture. Topics discussed in the utility section include: public relations and line clearance by Robert J. Kelly, Detroit Edison Co., alternatives to chemical brush control on transmission lines by G. A. Kihl, Public Service of Indiana; and a panel on right-of-way clearing, brush disposal and aesthetics, moderated by Richard E. Abbott.

In the session on municipal arboriculture, Jack Rogers superintendent of street trees, City of Los Angeles, will discuss planting trees along city streets. William T. Bell, street tree superintendent, Long Beach, Calif. will lead a discussion on the role of the Municipal Arborists Association.

Effective treatment for controlling bark borers will be the topic of Dr. David Neilson, department of entomology, Ohio Agriculture Research and Development Center, Wooster, Ohio. He will be the first speaker in the commercial arboriculture group. Following him will be a speech on getting your message across by Theodore Stamen, agriculture extension agent, Univ. of Conn.

Convention site, Sheraton Boston.

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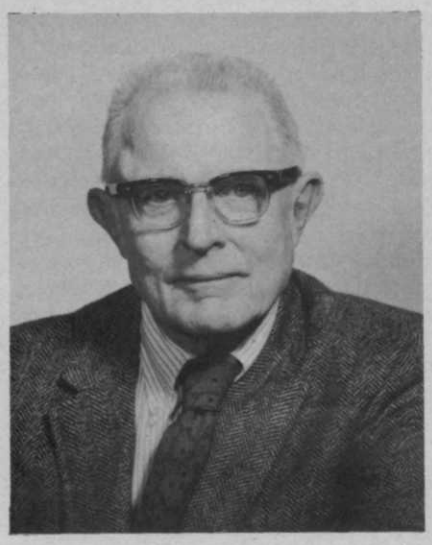

DuPont's T. C. Ryker Retires After 26 Years

Dr. Truman C. Ryker, product development manager for seed and soil fungicides of the Du Pont Company's biochemicals department, retired in May, completing 26 years with Du Pont.

The plant pathologist spent six years in research on rice disease at Louisiana State University and started with Du Pont as a field biologist in Baton Rouge. He came to Wilmington in 1950 as development and technical service representative and since 1964 has been product development manager. During this period he has been concerned with seed and turf fungicides and the development of new crop fungicides.

(Editor's Note: "T. C." has been an authority and generally an ambassador of good will in the development of Benlate benomyl fungicide as an aid in the control of Dutch Elm Disease. His energy and enthusiasm in helping to conduct meetings, his unquestioned expertise in the field of plant pathology, and his devotion to Du Pont and the protection of crops and horticultural plants have placed him at the pinnacle of his outstanding career. Few plant pathologists there are who do not personally know of or have not experienced the excellent work of T. C. Ryker. He has the rare gift of knowledge, wit and boyish energy.)

Dr. Ryker is a graduate of Mississippi State College. He received his master's degree from Louisiana State University and his doctorate from the University of Wisconsin. He is a member of the American Phytopathological Society.

T. C. retires to his home in Wilmington, Delaware where he will be available for consultation services.

2,4-D Formulation Added To Velsicol Line

Velsicol Chemical Corporation has introduced a new 2,4-D amine formulation for professional weed control in turf according to a company announcement.

L. E. Carls of Velsicol said the new product "fills a void" in the company's growing line of herbicides and insecticides. Velsicol also manufactures and markets Banvel herbicide, Banvel + 2,4-D herbicides, and offers a complete line of chlordane and heptachlor insecticide formulations. Bandane herbicide is the company's crabgrass control product.

The new 2,4-D amine contains the equivalent of four lbs. 2,4-D acid per gallon, and is economical and effective for controlling many weeds commonly found in turf, along roadsides and fencerows, in grass waterways and drainage ditches. These include: bindweed, burdock, bur ragweed, cocklebur, ground ivy, lambsquarter, morning glory, nutgrass, plantain, purslane, and wild onion.

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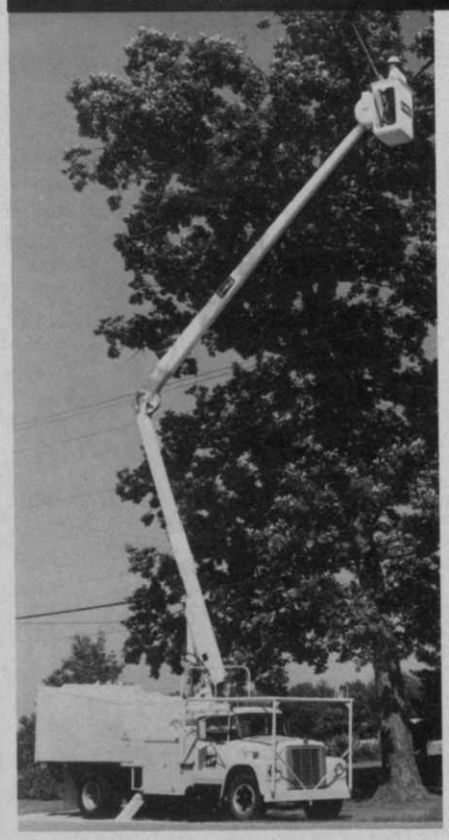

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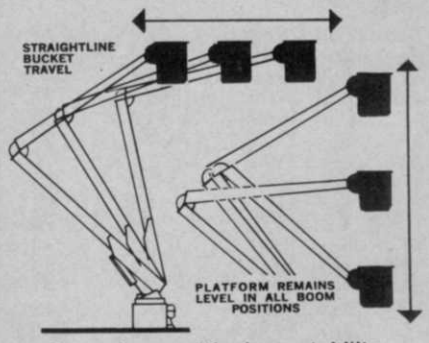

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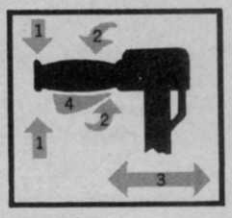

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LARGE TREE MOVING
(from page 21)

of the root system is retained on a tap-rooted tree than on a comparably sized lateral-rooted tree, when both trees are woods collected. Woods collected trees with lateral root systems should be dug with a larger diameter root ball than comparably sized tap-rooted trees. In the nursery, where root pruning is practiced, the original assumptions do hold true, and the tap-rooted trees are the ones which require the larger diameter root ball.

Certain tree species are very susceptible to damage from insects, diseases, and climatic conditions. Susceptibility increases when these trees are weakened by root losses during transplanting operations. These tree species and their primary destructive agents include:

American Arborvitae	—wind burn or desiccation
American Elm	—Dutch Elm Disease
Red Oak	—Oak Wilt
White Birch	—Bronze Birch Borer
White Pine	—White Pine Blister Rust

These species, along with others having a high susceptibility to damage, require considerable care in transplanting because of the increased possibility of loss. We have stopped moving American Elm, Red Oak, and White Pine at the request of the Minnesota State Department of Agriculture. The high incidence of Dutch Elm Disease, Oak Wilt, and White Pine Blister Rust in Minnesota has led to this decision. None of the transplanted trees were actually infected by the diseases, but the potential is still present and can not be ignored.

Like any new technique, our transplanting program has produced its share of disappointments. These disappointments did, however, point out how we could improve our transplanting procedures. Project 6 (Table 3) had the lowest survival rate (73%) of any of our projects. The 18 trees that were lost died because of inadequate watering. Delays in watering of one or two days duration occurred at critical times during the hot, dry, growing season. These repeated delays permanently weakened the trees and many were unable to survive in this weakened condition.

Many of the trees on Project 2 were comparatively large Burr Oak and Sugar Maple. These 8-inch and larger trees were moved with the 72-inch clam digger. Because of the moving chain that cuts through the soil, this machine shakes the root ball while digging the tree. The root system remaining with the tree often receives serious damage from this shaking. In spite of proper pruning and adequate watering, massive crown dieback occurred, probably as the result of damaged root systems.

The 72-inch clam is an obsolete piece of equipment which we no longer use extensively. Because of the moving chain, breakdowns are common and maintenance costs are high. Yet, the 72-inch clam is still the easiest and fastest way to move trees over 6 inches in diameter. Today, we limit its use to trees in the 6 to 8 inch size range, and we only move a few of these large trees on each of our projects.

Our cost for transplanting large trees has varied from a low of $29 per tree to a high of $268 per tree (Table 3). The average cost per tree moved over all of our projects is $132. Most of our tree moving has been accomplished by prime contracts let on a competitive bid basis.

TABLE 3. Summary of Project Survival and Cost

Proj. No.	Season Moved	Number Moved	Number Living	Percent Survival	Project Cost	Unit Cost	Survival Cost
1	Fall, 1968	179	179	100	$21,865	$122	$122
2	Spr., 1969	70	56	80	8,330	119	149
3	Fall, 1969	88	81	92	7,893	90	97
4	Fall, 1969	117	94	80	12,870	110	137
5	Fall, 1969	118	106	90	12,980	110	122
6	Spr., 1970	70	52	74	6,815	97	131
7	Spr., 1970	5	5	100	875	175	175
8	Spr., 1970	30	25	83	5,250	175	210
9	Spr., 1970	97	91	94	2,861	29	31
10[2]	Fall, 1970	96	90	94	25,726	268	286
11	Spr., 1971	53	48	91	5,290	100	110
12	Spr., 1971	57	56	98	2,888	51	52
13	Spr., 1971	43	41	95	2,176	51	53
14	Fall, 1971	118	93	79	20,886	177	225
15	Spr., 1972	60	60	100	13,860	231	231
16	Spr., 1972	209	209	100	39,564	189	189
17	Fall, 1972	172	172	100	20,468	119	119
18	Fall, 1972	144	144	100	17,353	121	121
19	Fall, 1972	27	27	100	2,783	103	103
20	Wtr., 1972	17	17	100	2,465	145	145
TOTALS	Incl., 1972	1770	1646	93	$233,198	$132	$142
	Before 1972	1141	1017	89	$136,705	$120	$134

[2] Project costs include a two year experimental watering program.

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However, some trees were transplanted through supplemental agreements in general highway construction contracts, and some trees were moved by our own maintenance forces using rented equipment. These latter two means of transplanting have usually resulted in higher and lower costs, respectfully. Normally, bids of approximately $120 per tree can be expected if the transplanting is done by prime contract with a minimum of 80 trees to be moved.

Factors which affect this bid price are:

— the number and size of trees to be moved,
— the distance of the haul (15 miles or less),
— accessibility of the tree source and planting sites,
— the amount of post-transplant work required.

Contracts which include a plant establishment period (1 year of watering and care) have exceeded our average price by as much as $98 per tree. However, experience has shown that $78 per tree is a realistic cost estimate for this added work. All things considered, our average cost of $142 per surviving tree (Table 3) is very economical, indeed, when compared with the costs of installing comparably sized trees by other methods.

Large, transplanted trees have many uses, especially in a highway situation. Besides blending the highway into its surroundings, large tree transplanting provides:

(continued on page 54)

This Jack Pine was dug with a 42-inch spade. Note that the root system was retained. Tree is about 2½ inches in diameter.

Root system retained on a 2½ inch diameter Bigtooth Aspen when dug with a 42-inch spade.

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TVA'S 3-D PROGRAM
from page 14)

chemical maintenance is by the basal method using 2,4,5-T esters and diesel oil mixtures. Tordon 10K pellets are used for spot treatment of small areas and are an excellent tool if their usage is properly planned. Tordon 101 was used in our helicopter spray program until 1972, and it was effective on most of the species with the exception of Ash and Red Oak.

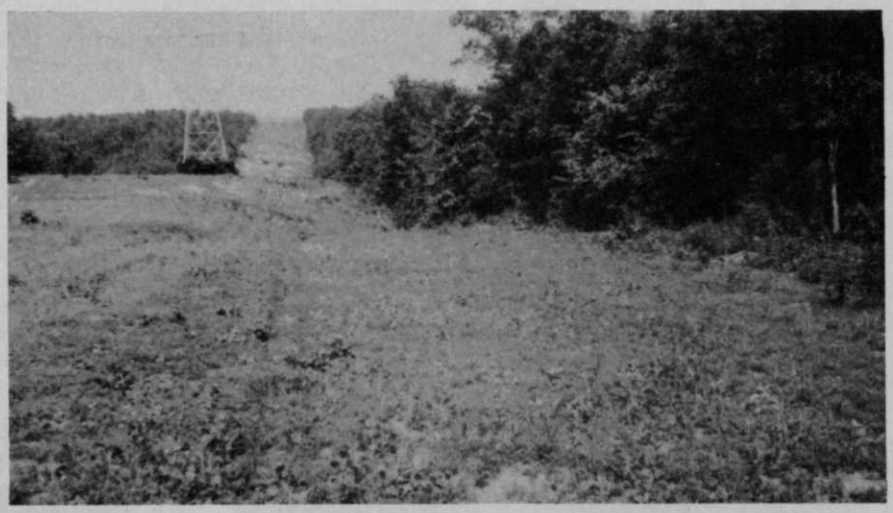
We realized that these resistant species would eventually present problems in areas not accessible to ground crews, so in 1968 we began testing helicopter spray applications of Tandex. We found that 15.2 pounds active material per acre would eliminate all the species remaining on the right of ways. In 1972 the greater part of our helicopter spraying was with Tandex using 19 pounds of 80-percent active Tandex in 20 gallons of water per acre.

Most of TVA's right of ways are easements which afford TVA the right to build, operate, and maintain transmission lines and the right to clear the right of way and keep it clear of brush, structures, and fire hazards. The property owner may make any use of the land that does not conflict with TVA's easement rights.

For many years we have encouraged property owners to make agricultural and other compatible uses of the land; but in 1968 TVA developed cooperative arrangements in which TVA contributes to the clearing, seed bed preparation, fertilizing, and seeding in order to encourage the conversion of brush acres to compatible uses, such as grazing, agricultural crops, wildlife refuges, and recreational areas.

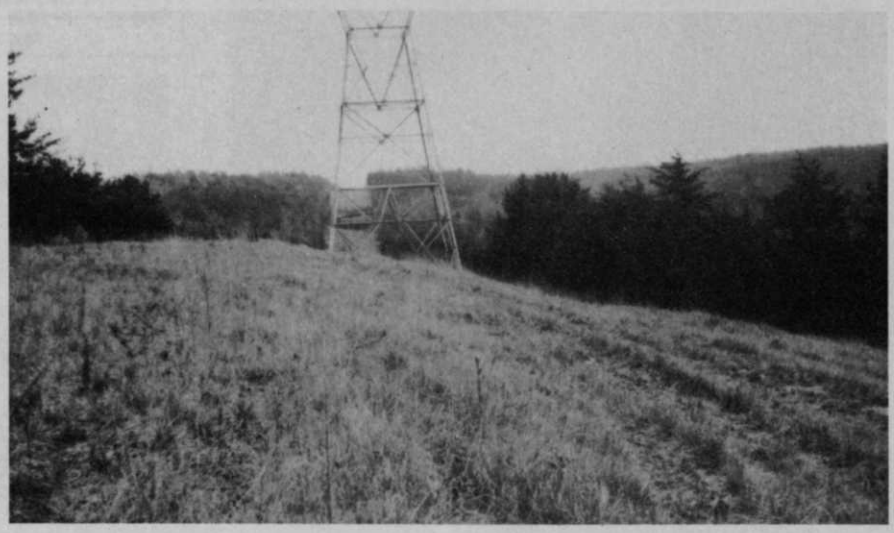
In this cooperative program the property owner may agree to perform certain work, such as clearing, seeding, and fertilizing, and TVA may agree to provide certain materials or labor, depending upon the resources of the property owner and upon the comparable costs to TVA of other right of way management alternatives. The plant mutually agreed upon is then confirmed in a letter agreement signed by the property owner and by TVA.

We believe that after he is stimulated to participate in making



This area is owned by a large landholder who cooperated in a game food project. One year after seeding, note ground cover of orchard grass, white Dutch clover, Korean lespedeza, brown top millet, scattered soybeans and bicolor lespedeza.

This is Picket State Park near Jamestown, Tenn. where TVA cooperates in a seeding and maintenance program with the state of Tennessee. Resistant species of brush are controlled with Tandex.



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compatible use of the right of way across his property, the owner is very likely to continue to use the right of way and that his use will, in effect, relieve TVA of further right of way maintenance across his property.

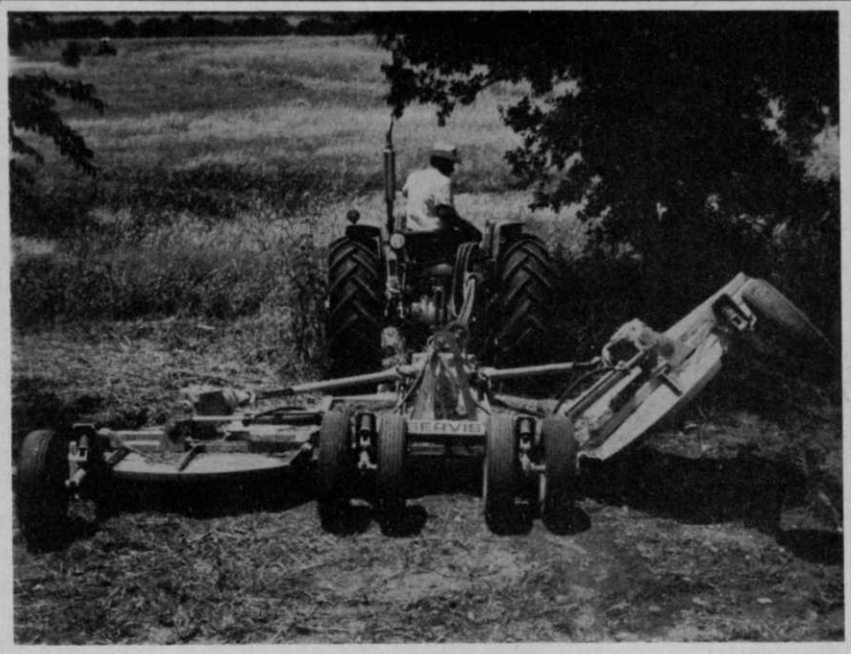
From 1957 until 1967 TVA's initial right of way clearing included stump treatment. However an analysis of the combined cost of stump treatment and "clean-up" operations after construction indicated that the right of ways could be prepared and seeded at approximately the same cost. In 1970 TVA began seeding all initially cleared right of ways where feasible. The areas of steep and rough terrain, which do not readily lend themselves to seeding, will probably be maintained by the use of herbicides.

Adoption of right of way seeding has not only promoted ideal transmission line access and security but has also produced aesthetically attractive right of ways and has assisted TVA's land buyers in negotiating with the property owners for easements. We have been very pleased to observe that many property owners immediately begin to utilize the seeded right of ways for livestock grazing.

Natural screens are left at all interstate and U.S. highways and at heavily traveled state and county roads regardless of the method of right of way maintenance that is used. Screen depths are determined by the locations of the line crossings and the general terrain features. Screen maintenance plans include removal of trees that grow tall enough to endanger the transmission line and encouragement of low-growing trees to take their places. In some cases tree trimming will be necessary, but we shall limit trimming to situations of absolute necessity.

Many of TVA's right of ways across Federal and state lands are being converted to game-management areas. In these cases TVA and the agency involved enter into share-cost arrangements similar to the shared-cost plans previously described between TVA and individual property owners.

We believe that our present right of way maintenance program is providing rignt of ways that are more attractive, more useful, and better for transmission line access and security than has any previous right of way maintenance program. The present program is good; but we are certain that there are ways to make it better, and we are dedicated to finding them. □



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CUTS A FIFTEEN-FOOT SWATH in a single pass and shortens time in the field. Makes fast work of right-of-way, brush, orchard, stalks, and pasture cutting. Virtually eliminates downtime. The Flex XV saves *time*.

MINIMUM MAINTENANCE REQUIRED to keep the Flex XV in the field. Sturdy construction from heavy duty materials assures longer service with few repairs. Servis Flex XV saves *money*.

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THE DIGGIN' DUTCHMAN
VERMEER TREE EQUIPMENT DIVISION

For More Details Circle (119) on Reply Card

POA ANNUA CONTROL

(from page 16)

bentgrasses or leave bare areas.

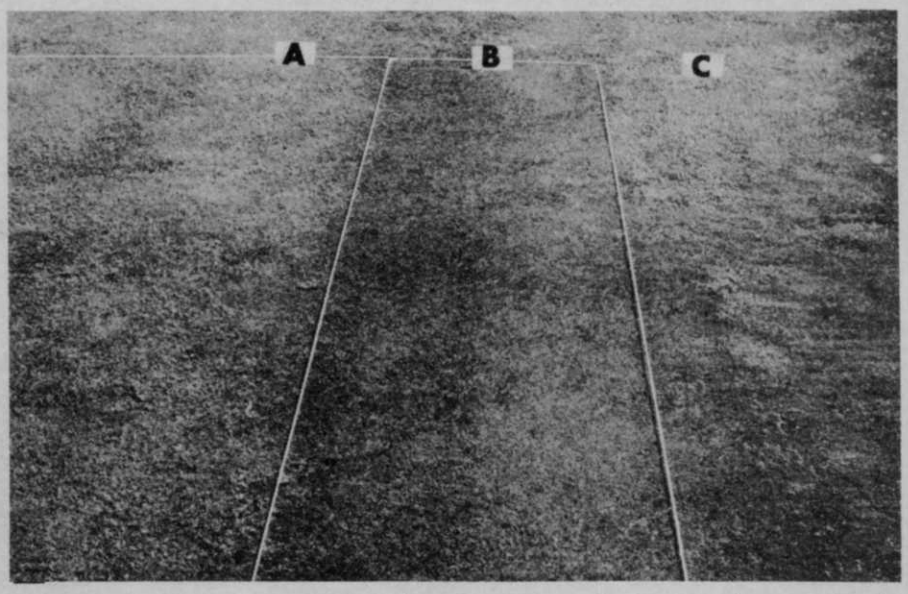
Perkins[4] obtained good control of *Poa annua* with Betasan applied at 30 pounds (active ingredient) per acre. However, at 15 pounds active ingredient per acre this herbicide was not effective at five yearly applications. Because annual bluegrass seed does not require the after-ripening process for germination, it is likely that spring and fall applications of preemergence herbicides to coincide with germination are necessary.

Preemergence herbicides which will prevent germination of *Poa annua* seed but will not kill the mature plant did not control annual bluegrass.

Younger[6] found that *Poa annua* is not truly annual in many areas. This is especially true on putting greens where highly perennial types are segregated out by cultural practices. After application of some preemergence herbicides, there are problems of getting seed germination and stands of grass. However, applications of either calcium arsenate or lead arsenate[3] result in germination and growth of grasses.

The last application of herbicides was made in May of 1969. Notes taken in April of 1972 disregarding bentgrass varieties showed that only calcium arsenate and lead arsenate were effective. Only two to five percent annual bluegrass encroachment three years after the last application in 1969 was reported (Table 1). Lower percentage of *Poa annua* in the control may be the result of injury from herbicide treatments to other plots.

In greenhouse studies, Juska and Hanson[3] obtained much poorer control of annual bluegrass with calcium arsenate — ten pounds per thousand square feet—when rates of phosphorus were increased. They concluded that soil phosphorus should be maintained at low levels for best results. Phosphorus levels were very high in field soil. However, excellent control of *Poa annua* was obtained with both calcium arsenate and lead arsenate because of the high buildup of arsenates. □



Absence of Poa annua in plot "B" three years after the final application of calcium arsenate in 1969. Plot "A" was treated with Zytron DMPA and plot "C" is the control.

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1. Griffin, H. M. 1972. How dependable is pre-emergence weed control? USGA Green Section Record 10(3):1-3.
2. Juska, F. V., A. A. Hanson, and A. W. Hovin. 1970. Phytotoxicity of preemergence herbicides. USGA Green Section Record 8:2-6.
3. Juska, F. V., and A. A. Hanson. 1967. Factors affecting **Poa annua** L. control. Weeds 15:98-101.
4. Perkins, A. T. 1968. Effective turfgrass weed control. USGA Green Section Record 6:11-15.
5. Sprague, H. B., and G. W. Burton. 1937. Annual bluegrass (**Poa annua** L.) and its requirements for growth. New Jersey Agr. Expt. Sta. Bull. 630.
6. Youngner, V. B. 1969. **Poa annua**: Viewpoints on control methods and precautions in the West. Conference Proceedings, Golf Course Superintendents of America, p. 74-75.

Ruckelshaus Names Fri Acting EPA Administrator

Robert W. Fri, 37, has been named Acting Administrator of the Environmental Protection Agency (EPA). He replaces William D. Ruckelshaus who early last month was appointed Acting Director of the Federal Bureau of Investigation (FBI).

Fri had served as Deputy Administrator of EPA under Ruckelshaus since June 15, 1971. Prior to that time he was a partner in an international management consulting firm, McKinsey and Company, Inc.

As Deputy Administrator he has on numerous occasions represented Ruckelshaus at official meetings and has conducted press conferences on the Administrator's behalf.

In accepting the appointment, Fri said that the existing staff of the Administrator's office will remain. "Thus, I anticipate the top management functions of the Agency will continue to be performed without disruption," he said.

"I foresee no shift in policy nor slackening of pace as we pass through this transition. Our job is too important to hesitate for even a moment in pursuing our goal of environmental quality. I am confident of the Agency's continued success," Fri told newsmen.

The Acting Administrator is a native of Kansas City, Kan. and a graduate of Rice University with honors in physics. He received his Masters of Business Administration from Harvard University with distinction. He was a Baker Scholar at Harvard, and is a member of Phi Beta Kappa.

Professional Grounds Managers Meet In Washington, D. C.

Nearly 50 members of the District of Columbia Branch of the Professional Grounds Management Society met in Bethesda, Md. in April.

Site of the meeting was the Federation of American Societies for Experimental Biology (FASEB). Items discussed during the business meeting were the Metropolitan Horticultural Happening at Tysons Corner in early August and the induction of two new members. They are: Mike Weber, garden foreman, and Robert Springs, maintenance foreman—roads & grounds, both with the National Navel Medical Center, Bethesda, Md.

Speaker for the evening was Bob Shields, superintendent, Woodmont Country Club, Rockville, Md. He presented a slide-talk show on "what the other fellow does." Shields explained that there are two 18 hole courses under his management, one Bermudagrass and the other bluegrass.

He impressed those in attendance with the area of work under his responsibility. We have 7 acres of greens, 2 nurseries, 5 acres of tees, 100 acres of fairways, 150 acres of ruff, 8 acres of ponds, 5 pumping stations and 115 sand traps to maintain, he said.

Shields reviewed the changes that have taken place in his operation over the years. He outlines other problem areas experienced by superintendents including roads, tennis courts and ornamental plantings.

Toro's Irrigation Division Completes Training Sessions

More than 650 independent installers of Toro irrigation equipment have been shown how "service opens the door to sales" in a series of local and regional training sessions conducted by The Toro Company and its distributors throughout the U.S.

After the wind-up meeting of the series in Honolulu at the end of April, Richard A. Danielson, marketing manager of consumer products for Toro's Irrigation Division, termed the training program "highly successful."

He believes, he said, that all participants are more aware now of the selling opportunities that exist when making service calls.

At the sessions, participants were reminded that "confidence in the availability of prompt and reliable service continues to gain importance in the the purchase decision — for new installations, replacements and modifications."

The training sessions — two days for regional meetings and one day for local meetings—were conducted in California, Florida, Illinois, Michigan, Oregon, New Jersey, Texas, Utah and Washington, in addition to Hawaii.

The instructional team for the regional meetings included: Lee Bean, manager of Toro's "Irrigation University" at Riverside; Ken Larsen, Toro's irrigation service manager; Doug Colson and Gary Harbour, service field representatives, and Danielson.

Amchem's Bob Beatty Retires After 35 Years

Robert H. Beatty, internationally recognized authority on selectively controlling undesirable plans with herbicides, has retired from Amchem Products, Inc.

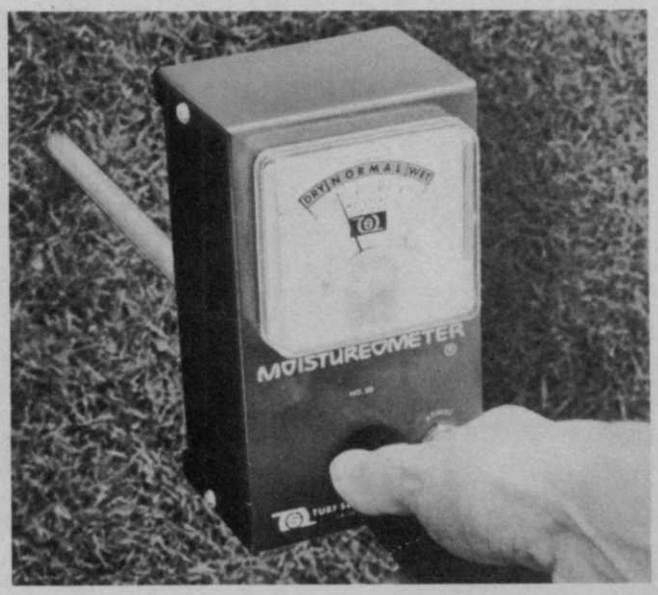
Beatty, by tramping utility rights-of-way, walking through corn and soybean fields and over rangelands, personally conducting hundreds of tests and supervising thousands of others, came to know problems and opportunities for controlling vegetation with herbicides as few men do.

Reared in Philadelphia, Beatty attended Penn State University where he starred as a football player and earned a degree in horticulture. His career with Amchem began in 1939 when interest in plant hormones was gaining momentum. Much of his early work was with 2, 4-D and 2,4,5-T. These still-popular herbicides have contributed much to the control of common weeds and undesirable woody plants. They have made crop production more economical, and they have helped hold down utility costs.

Dozens of widely read papers which Beatty authored, or co-authored, and his appearance on the programs of numerous weed control meetings, spread his reputation as an authority on selective plant control through the use of herbicides. He led in the formation of the Weed Science Society of America and was elected its first president. He is a past president of the Northeastern Weed Conference, and is a Fellow of the American Association for the Advancement of Science and of the Weed Science Society of America. He is listed in American Men of Science.

TRUCK-TRACTOR: Wheel Power Corporation, Mesa, Arizona

It's a truck. It's a tractor. It's for towing. It's for hauling. It's for grading. It's for mowing. It's for all of these, and more. This unit features 4-wheel drive, high flotation, low pressure tires, pulls 12,000 lbs. in soft plowed earth, has full-power hydraulic steering, full tilt cab for easy access to all working parts, load capacity of 2000 lbs. inside turning radius of 7 feet, and more and more. If this is not enough, unit comes with a full line of accessories. Total length of unit is 155 inches with a 72 inch long dump bed. It has an articulated joint in the center to make turning fast. For more details, circle (705) on the reply card.

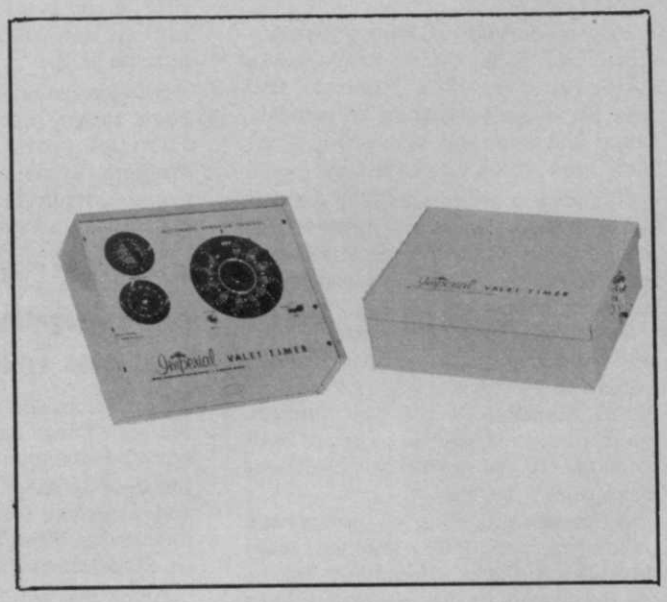


MOISTUREOMETER: Turf Service Laboratory, Laguna Beach, Calif.

Take the guesswork out of landscape and plant watering. This precision meter accurately registers the moisture content of the soil. Helps prevent overwatering or underwatering. Unit can be calibrated with a built-in adjusting knob to any type of soil. Sensing probe is simply pushed into the area to be tested and reading is shown instantly. Moisture content readings can be taken at any depth from 0 to 12 inches, on indoor or outdoor plantings. Weight is less than a pound. Construction offers user no trouble (backed by a five-year guarantee). For more details, circle (706) on the reply card.

FRONT-MOUNTED FLAIL MOWER: Outdoor Power Equipment Div., FMC Corp., Port Washington, Wisc.

Put the pacesetters of two different fields together in a third area and the marriage is a success that's attention-getting. That's what Mott and FMC Corp. have done. The Mott model 18-60 front-mounted flail mower with 60-inch cut now rides ahead of a Bolens HT-18 tractor. Special features include the utilization of the tractor hydraulic system on the front-mounted, full swivel caster wheels to raise the mower for transportation. Mower is powered by the tractor PTO. For more details, circle (702) on the reply card.

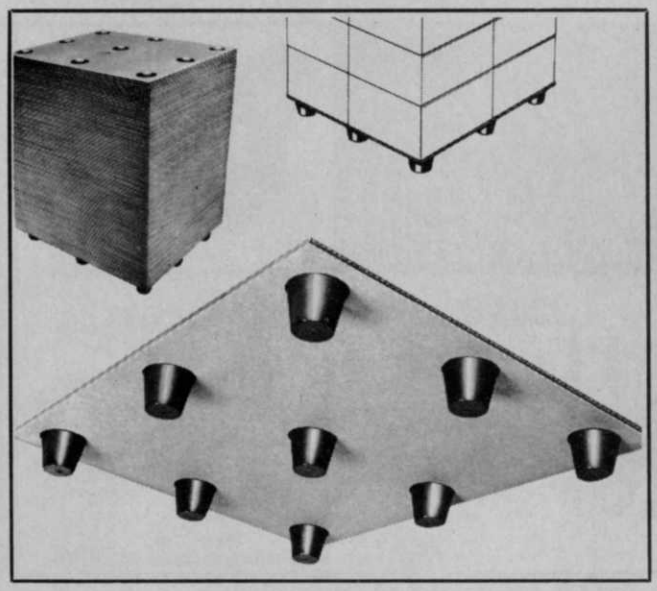


CONTROLLER: Imperial Underground Sprinkler Co., Kansas City, Mo.

Automatic, semi-automatic or manual performance can be achieved from this controller which features no diodes or capacitors and circuit breakers which eliminate fuses. Unit is wired for 24 volts a.c. unless a 110 volt unit is ordered. Variable timing from 0 to 30 minutes and 0 to 60 minutes is built in. Standard controls include 14-day calendar wheel, 24 hour timer and high-speed indexing motor. Unit also has a rain or off switch. For more details, circle (708) on the reply card.

HYDRO-FLAIL: Lehara Equipment Company, New York, N.Y.

Here's a mower that will work on steep banks, over guard rails and ditches and mow both sides of most drainage ditches without crossing the ditch. Hydro-Flail cuts grass and brush on banks as high as 15 feet 10 inches above ground level. Side reach is 14 feet. A crib-mounted, flail-type cutting head operates from the end of a hydraulically-controlled boom and is powered by a 21½ Hp motor. Its spring-mounted floating head is designed to assure close, even mowing on uneven ground. Mower head pulls sideways and holding arm disengages when cutter head encounters an obstacle. For more details, circle (709) on the reply card.

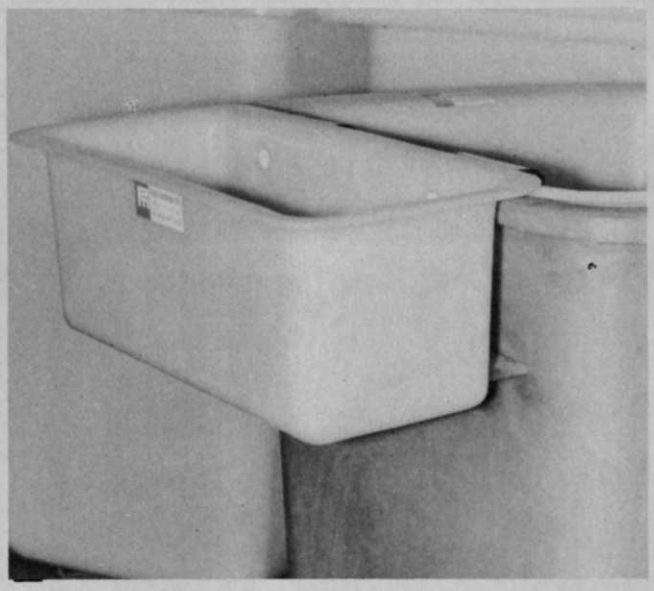


EXPENDABLE PALLETS: Triad Plastics, Inc., Detroit, Mich.

Sod growers landscape contractors, superintendents and anybody else in a business where pallets are used will find these pallets of interest. They're not made of wood but special corrugated fiberboard and high-impact plastic. They are nestable. Pallets stack easily on top each other. Take up to seven times less space to store than wood pallets. Weight is 5 to 7 pounds, but each pallet will support a load in excess of 2½ tons. Legs stand a full 3½ inches high posing no problem for most types of forklifts. For more details, circle (710) on the reply card.

IMPROVED BRUSH CHIPPER: M-B Company, New Holstein, Wisc.

Models TWC-612 and TWC-915 have been improved, according to the manufacturer. Both chippers now have Ford industrial engines as standard equipment. Discharge chutes have been redesigned for faster, more efficient delivery of chips. Chutes are rectangular, having a round end with 180 degree rotation of discharge through an adjustable deflector bonnet. Features retained include: spring supported chipper feed plate which adjusts feed pressure to size and hardness of material, eliminating a flywheel; and an optional "quick idle" throttle control. For more details, circle (711) on the reply card.



BUCKET TOOL BOX: Plastic Techniques, Inc., New Boston, N.H.

It's new. It's different, and it's handy if you own a bucket. This tool box is molded of unbreakable, low-density polyethylene that's smooth both inside and out. Also has rounded corners. Unit can pass the same electrical tests as PTI liners. Box can hang from either the inside or the outside of the basket via two high-density polyethylene brackets that are permanently welded to the side of the box. Length is 19 inches; width is 8 inches; depth is 8 inches. Weight is 8 pounds. For more details, circle (712) on the reply card.

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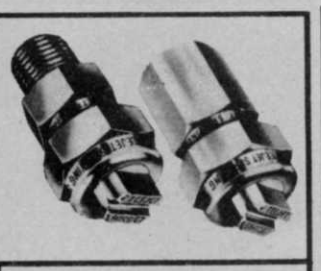

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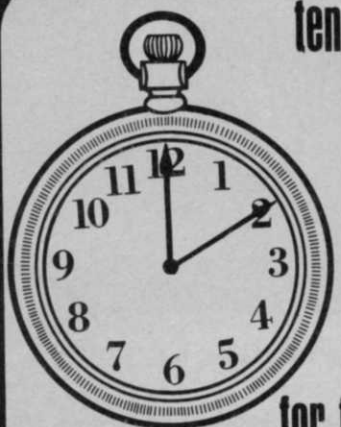

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—meeting dates—

Western Chapter, International Shade Tree Conference, annual meeting, Hotel Utah, Salt Lake City, Utah, June 17-20.

International Turfgrass Conference, 2nd annual, Virginia Polytechnic Institute and State University, Blacksburg, Va. June 19-21.

Texas Turfgrass Field Day, Texas A&M University, agronomy field lab, College Station, Tex., June 27.

South Carolina Turfgrass Conference, 4th annual, Clemson House, Clemson, S.C., July 10-11.

Ohio Chapter, International Shade Tree Conference, summer meeting, Benjamin Wegerzyn Garden Center, Dayton, Ohio, July 11.

American Association of Nurserymen, Radisson Hotel, Minneapolis, Minn., July 14-18.

Hyacinth Control Society, Hotel Monteleon, New Orleans, July 15-18.

American Sod Producers Association, annual summer meeting and field day, Denver, Colo., July 16-19.

Penn Allied Nursery Trade Show, Pennsylvania Nurserymen's Association, Allenberry, Boiling Springs, Pa., July 31-Aug. 2.

USDA Turfgrass Field Day, Agricultural Research Center-West, Beltsville, Md., Aug. 1.

Plant Science Day of the Connecticut Agricultural Experiment Station, Lockwood Farm, Hamden, Conn., Aug. 8.

International Shade Tree Conference, 49th annual meeting, Sheraton-Boston Hotel, Boston, Mass., Aug. 13-16.

International Pesticide Applicators Association, annual meeting, Marriott Inn, Berkeley Marina, Berkeley, Calif., Aug. 15-18.

North Dakota State Horticultural Society, annual meeting, Canada Department of Agriculture Research Station, Morden, Manitoba, Aug. 21-22.

Turf and Landscape Day, Ohio Agricultural Research and Development Center (OARDC), Wooster, Ohio, Sept. 11.

Michigan Turfgrass Field Day, Crop Science Field Lab, Michigan State University, E. Lansing, Mich., Sept. 13.

Lawn & Garden Distributors Association, annual meeting, Sheraton-O'Hare, Chicago, Sept. 19-21.

Course for Licensing of Tree Pruners, Agricultural Extension Centre, Brandon, Manitoba, Canada, Oct. 1-5.

Society of Municipal Arborists, 9th annual meeting, Flint, Mich., Oct. 3-5.

Southwest Turfgrass Conference, Albuquerque, N.M., Oct. 11-12.

Industrial Weed Control Conference, 8th annual, Texas A&M University, College Station, Tex., Oct. 15-17.

Central Plains Turfgrass Conference, Manhattan, Kans., Oct. 17-19.

ARBORIST SHOP TALK

By Hank Harvey Jr.

Rutledge, Pennsylvania

That New Equipment Decision

So you need a piece of equipment . . . a truck, a sprayer, a chipper, etc. You've checked into the price of new equipment and it's enough to frighten you. But buying a piece of equipment used is a gamble — a calculated risk. Decisions, decisions!

But WAIT! Don't lose your cool! There's an easy way out . . . at least out of the murky depths of indecision.

Here's how you can manage to make the right decision consistently and also save money for yourself in the process:

First, you must objectively and accurately evaluate your specific needs and determine exactly what it is that you need for your operations — nothing more, but certainly nothing less.

Second, you must determine how it is you are going to get the best deal or fill your specific needs with the amount of money you have to spend. The big-time operators often have their accountants make these evaluations for them but, nonetheless, big or small-time, the application and cost evaluation should be made.

EVALUATING YOUR NEEDS

Sit down with a piece of paper and pencil and write down your needs (not *wants, needs)* the physical specifications your machine must have.

If it's a chain saw and you must have a 24" bar put down "must have 24" bar." Or if it is a chipper and it *must* have a safety cut-off switch, write that down.

Write every specification down that you can think of so that later you can check them off against any piece of equipment you are considering to see if it meets all your specifications.

You should also include your financial limits as part of your specs. If you can pay whatever is necessary, write down "money limitation — none." If you can only justify an expense of $2,500 — put down "money limitation — $2,500," etc.

It is important to be brutally realistic about your needs. It can be revealing.

For instance . . . you're going to buy a chipper. Your buddy who is a contractor just got a big new V-8 16 inch job . . . a beauty. That's what you want, too. But that V-8 16" job costs, let's say $1000 more than a 12" one with a 4 or 6 cylinder engine.

Now let's say you sell firewood too, so that nearly everything more than 3 or 4 inches in diameter you are keeping for firewood not grinding it. Do you then really *need* a V-8 16" chipper? You might be just wasting $1000!

So know exactly what you need before looking to buy and shop to buy what will fill your needs. Nothing more, nothing less.

NEW OR USED

Next step is to decide whether you will buy a new piece or a used piece. "Used!" you say. "I wouldn't *have* a piece of used equipment." Nothing but "somebody else's headaches" right?

Well, ask yourself this. Isn't every piece of equipment you're operating right now "USED"?

There are certain advantages to buying used equipment besides the obvious fact that it is usually cheaper initially. One other advantage is that of availability. You may be able to get a used piece of equipment when you need it; easier than waiting for delivery on a new piece.

Also, you may be able to get certain extra cost features on a used piece that, if you added them onto a new piece might put the cost out of your reach.

Thirdly, there may be a distinct tax advantage to buying a used piece and fixing it up (that's all "expense" rather than equity) over buying a new piece which will have a higher "asset" value.

Of course there is always the possibility that you may buy a real bummer, too. However, if you really take the pains to look over and test run a piece of equipment to the best of your ability, that probably won't happen.

Most people buy too hastily. Take your time. Ask specific questions. Check it out thoroughly. Don't overlook the obvious.

ADVANTAGES

New equipment has clear advantages if you rule out the major consideration of money. New equipment is always modern. You can find the latest features and you have a selection of whatever feature or option you want.

It's more prestigious . . . a better image . . . to have new equipment. (Although newly painted used equipment looks almost as good.)

You will no doubt have a guarantee. And faster, more easily available repair service should it be needed.

Buying new equipment simplifies the work of the buyer. Just find the dealers whose equipment meets your needs and decide then on the basis of competitive prices, guarantees, convenience of location, reputation for service, etc.

One standard hazard of buying new equipment is that the dealer usually "sells" the buyer, rather than the buyer "buying" what he wants. Try to be sure of what you do want and don't let an over-zealous salesman "switch" you to more saw, sprayer, chipper, or truck than you actually need or can afford.

When you buy or are about to buy a piece of equipment, you may be faced with the problem of disposing a piece of equipment which you will no longer need. A "trade in" to a dealer may not be to your advantage.

SELL USED EQUIPMENT

So sell your own used equipment. How? Try a classified ad in a local paper under "Machinery and Tools" heading. Or put a card or little sign up where your crowd will see it (the chain saw shop, arborist supply house, chipper or sprayer dealer, etc.).

For large equipment, a classified ad in the trade magazines such as WEEDS, TREES AND TURF is a good bet. You might also phone around to some of your friends and competitors who might be interested.

Should you fix it up before selling? Yes. Go over it thoroughly, clean it, paint it up, and lubricate it well. It will look and run better and sell faster. Gather together any extra parts and manuals that go with it. They are extras that will help. Know exactly what is wrong with it and be honest.

Don't try to "doctor" anything to conceal something that is wrong. Either fix it or be frank about it so that your buyer can fix it himself. You don't have to tell anybody it is a worn out piece of junk (let them evaluate it themselves and make their own judgment) but don't lie either.

What may no longer meet one person's needs may still be adequate to meet those of someone else. Ask a fair price and you'll probably have no problem selling your hand-me-down equipment.

LARGE TREE MOVING
(from page 45)

1. immediate shade and vegetative cover at rest areas.
2. softening touches around overpasses, interchanges, and service buildings.
3. a means of saving quality trees and rare species which would otherwise be destroyed during construction.
4. a means of establishing noise barriers, headlight glare screens, and greenbelts along urban and suburban roadways.
5. a means of establishing aesthetically appealing, special facilities (one of our projects was designed to stimulate actual driving conditions by creating blind corners at a driver examination center).

Along with having this multitude of uses, large tree transplanting has proven very successful and very economical in practice.

Large wild or woods collected material can be successfully transplanted if good horticultural practices are employed in the transplanting work. Once the tree has been moved, water must be applied in sufficient quantities and at regular intervals to prevent crown dieback from occurring.

Crown dieback, from whatever cause, is the most common, adverse effect of the transplanting technique, and is the warning flag of improper project planning.

Proper project planning is an exacting science which requires the balancing of many interrelated factors, some of which have been mentioned here. The Minnesota Department of Highways, through five years of experience in transplanting, has found that large tree moving is a viable landscaping tool which will be used with greater frequency in the coming years. □

Special Wage/Hour Summary Published by AAN and NLA

The American Association of Nurserymen, in cooperation with the National Landscape Association, has recently published a "Special Summary of Wage/Hour Laws Affecting Government Contracts." This summary has been prepared by the AAN and NLA staffs jointly with the AAN attorneys to inform nursery businessmen, in plain non-legalistic language, how wage-hour laws affect firms which obtain government contracts.

"Many AAN firms bid on government contracts, particularly those which provide landscape services," points out Leo Donahue, administrator of the American Association of Nurserymen. "Both AAN and NLA have published in their respective newsletters information on the wage-hour aspects of bidding such contracts. There is nowhere, however," Donahue comments, "a brief publication summarizing the wage-hour laws affecting government contracts. That was our objective in writing this special summary."

Lack of knowledge in this specific area can prove extremely costly. Some firms have avoided bidding government contracts because of the complexity of the wage-hour laws. Therefore, this special summary should prove welcome news to all AAN firms involved in this particular area of landscaping. The AAN urges nursery businessmen to seek the advice of their attorneys regarding any specific problems which they may encounter.

The "Special Summary of Wage/Hour Laws Affecting Government Contracts" is available only to AAN members. It can be purchased for $2.00 by writing the AAN. 230 Southern Building, Washington, D.C. 20005.

First best, we'll admit, is a good soaking rain. But an underground system using Certain-teed PVC pipe comes in second to nothing else.

Economy. The overall installation cost is less. Lightweight PVC requires no special handling machinery. Joints are quickly and easily made. You get a choice of FLUID-TITE™ double-gasket joints, or deep-socket, solvent-weld joints. Fast installation saves money.

No maintenance worries. In the ground, PVC pipe is inert. It won't corrode, rot, or rust. Joints don't leak. And non-metallic PVC never needs protection against electrolytic action.

More water for less pressure. Smoothbore PVC is free of bumps and other obstructions that could hinder water flow.

Pays for itself quickly. Because you spend less to install it, and practically nothing to maintain it. And you save because one man can easily handle a PVC system.

Get it all from your Certain-teed distributor. Including PVC fittings and all the expert supervision you need. If keeping the turf watered and green is your responsibility, specify Certain-teed PVC. You'll never have a big tournament called for lack of rain. For complete information, write: Certain-teed Pipe & Plastics Group, Valley Forge, Pa. 19481.

CERTAINTEED Pipe & Plastics Group

Now . . . an all-new liquid formulation of SEVIN® Carbaryl . . . the insecticide you've used and trusted for 15 years to control over 160 harmful and destructive insect pests!

New liquid SEVIMOL 4 is a free-flowing liquid featuring the unique combination of dependable proven SEVIN insecticide and molasses. The sticking power of molasses provides resistance to washoff by rainfall, watering or dew. This means longer lasting effectiveness.

You'll like the new formulation for other good reasons, too. • The free-flowing liquid eliminates dust • It's easier to measure and apply at proper rates • Pre-mixing is eliminated • When diluted with an equal amount of water, SEVIMOL 4 is compatible with most other commonly used pesticides.

Free Customer Service Booklet

Because you're a pro in the spraying business, we figure you know all about the low toxicity and the complete biodegradability of SEVIN. But your customers probably don't. So we've prepared a little quick-facts booklet to help you get right to the point . . . and to the sale.

New Liquid SEVIMOL 4 insecticide offers the type of "good neighbor" pest control your customers are looking for.

SEVIN Carbaryl has a record of effective control of target pests. An objective look at benefits vs. risks favors the use of SEVIN due to its biodegradability and low hazard to people, birds, fish and wildlife.

As with all insecticides, be sure to read the product label and follow directions for use carefully.

Make sure you're using new Liquid SEVIMOL this year!

SEVIMOL® 4

CARBARYL INSECTICIDE

The sensible way
to get tough.

UNION CARBIDE

UNION CARBIDE CORPORATION
Agricultural Products and Services
P. O. Box 1906, Salinas, Calif. 93901

SEVIMOL and SEVIN are registered trademarks of Union Carbide Corporation for carbaryl insecticides.

☐ Send me a free sample of your booklet designed to help inform — and sell — my SEVIN and SEVIMOL 4 insecticide customers.

☐ Send more facts on new liquid SEVIMOL 4 for custom application on shade trees and ornamentals.

Name _____

Business Name _____

Address _____

City _____ State _____ Zip _____

No. 3-2316

WAYNE STUMP KING GETS THE BIG ONES.

No stump or machine is a match for the Wayne Stump King. Exclusive 18" *dual* cutting wheels give it the edge. A rugged 65 HP engine gives it the power. Now add a 64" reach, a 147" lateral range, a 27" cutting depth, unrivaled maneuverability and safety—and you know why you should write for the facts and a personal demonstration.

WAYNE

FMC CORPORATION
WAYNE DIVISION

1201 East Lexington Street • Pomona, California 91766 • (714) 629-4071

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ELM TREES CAN BE SAVED

SAVE OUR ELMS
CHECK BEFORE YOU CHOP

Yes, twelve years of successful results with over 6,000 trees have proven Freers Elm Arrester to be the number one method for the arrest and control of Dutch Elm Disease. Trained applicators can now successfully fight Dutch Elm Disease at a cost that is minimal.

Registered for use in Iowa, Illinois, Missouri, and Indiana under E P A reg. #7452-1.

distributed by ELM-R INC.
MUSCATINE, IOWA 52761
(319) 263-0211
CHECK BEFORE YOU CHOP!

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industry people on the move

JOSEPH M. MARSH appointed president of the landscape maintenance division of Environmental Industries Inc. (OTC). This is a new division of the company which will coordinate the industrial, commercial, major housing and other large scale maintenance operations of Environmental Care, Inc. of Calif.; ECI of Colorado and Green Valley Landscaping, Inc.

* * *

TOM KREAGER is reassigned to the Colorado and Utah area as a technical representative for O. M. Scott & Sons. He replaces **DAVE SADLER.** In another move, **BILL KENEIPP** joins the company as a technical representative in the central and southern Illinois area. He managed his own company, Turf Tenders in Indianapolis prior to joining Scotts.

* * *

PAUL DORSEY appointed district sales manager for Wayne products in the southwestern U.S. He will work with municipal, industrial and forestry products dealers and coordinate sales and marketing efforts of these dealers in this seven state area.

* * *

DR. PAUL F. HOFFMAN, elected executive vice president, Velsicol Chemical Corporation. He was formerly a group vice president, agricultural and international.

* * *

GERALD P. "JERRY" CLIFFORD, named automatic controls sales representative for Hays Mfg. Div. of Zurn Industries, Inc. He will cover a five state area in the southwestern U.S.

* * *

RALPH D. MURRAY appointed district sales manager for the New England states for the Toro Company. He will be based in the Boston area.

* * *

JOHN L. COOK, appointed advertising supervisor for Outdoor Power Equipment Division, FMC Corporation. In other company moves, **CLETUS J. HURST** becomes manager of industrial relations and manpower resources, **HARVEY L. SLADE** to controller, a position formerly held by Hurst, and **KARL C. LEICHT,** former personnel director, becomes division traffic manager.

* * *

MARGARET HERBST, founder of a public relations firm by that name, has been named to the Hunter College of Fame. She was chosen in recognition of her professional achievements in the field of horticultural public relations.

* * *

THOMAS CHRISTY, JR., appointed vice president-marketing for the Pipe & Plastics Group of Certain-teed Products Corp. He is responsible for all product marketing for the group.

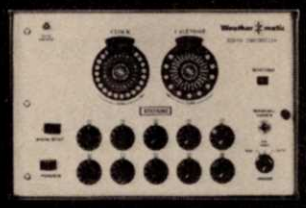
* * *

SIGMUND R. DOMANSKI, named product manager of chemical specialties in the coatings department of the Rohm and Haas Company. **REID C. RICHMOND,** named product manager in the agricultural and sanitary chemicals department for the company.

* * *

DAVID L. BRUELS, named national sales manager of Ross Daniels, Inc. He was formerly the general manager of the retail products division of Conwed Corporation.

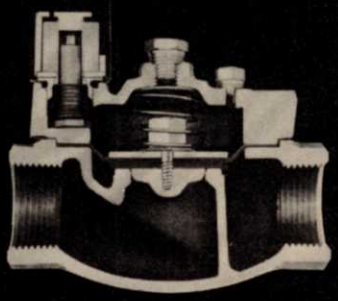
For More Details On Preceding Page Circle (129) On Reply Card



Weather-matic turf irrigation components are higher quality and cost a little more.

Therefore, a Weather-matic System costs more than another system. Right?

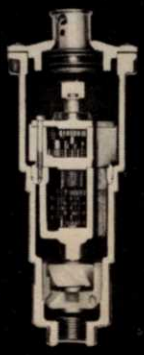
Not necessarily.



You see, in a commercial or industrial application, with Weather-matic's superior design capabilities, fewer components may be required for optimum performance. That means you get higher quality, a better functioning system — and a lower total cost.

So, you don't always get what you pay for. Sometimes you get more.

For additional information on Weather-matic irrigation systems, write or call:



Weather matic

LAWN AND TURF SPRINKLER SYSTEMS

P. O. Box 18205 / Dallas, Texas 75218 / (214) 278-6131

For More Details Circle (136) on Reply Card

Production Expansion Plans Announced By Ansul

The Ansul Company has announced plans for expanding production of its Ansar line of organic arsenical herbicides to meet present shortages and market needs.

Taking advantage of recent improvements in production technology, the company expects to accomplish the first phase in time for the 1974 market. Estimated dates for completion of the second phase of its expansion program were not announced.

New Industrial Distributors Named By Bombardier

Road Machinery & Supplies Co., Duluth, Minn., and Work Equipment Co., Inc., Milwaukee, Wis., have been appointed distributors for Bombardier off-road tracked vehicles, it was announced by Richard E. Crighton, marketing director for Bombardier Limited's Industrial Division.

Road Machinery & Supplies Co. will sell and service Bombardier equipment in Minnesota, North and South Dakota, Western Iowa and parts of Wisconsin and Michigan.

Work Equipment Co., Inc., will sell and service Bombardier equipment in most of Wisconsin, all of Illinois, upper Michigan and Eastern Iowa.

Both companies will handle the full line of Bombardier off-road tracked vehicles, designed for use in snow, mud, and other difficult terrain conditions. Included is Bombardier's new Muskeg Brush cutter, designed for right-of-way clearance and other unusually heavy cutting problems; a new line of Skidozers built especially for ski slope and trail grooming; various tracked vehicles for other off-road applications; and Bombardier SW snowplows, designed for use on university, arena, and shopping center walks and parking lots.

Rx FOR TURF TRANSPLANTS

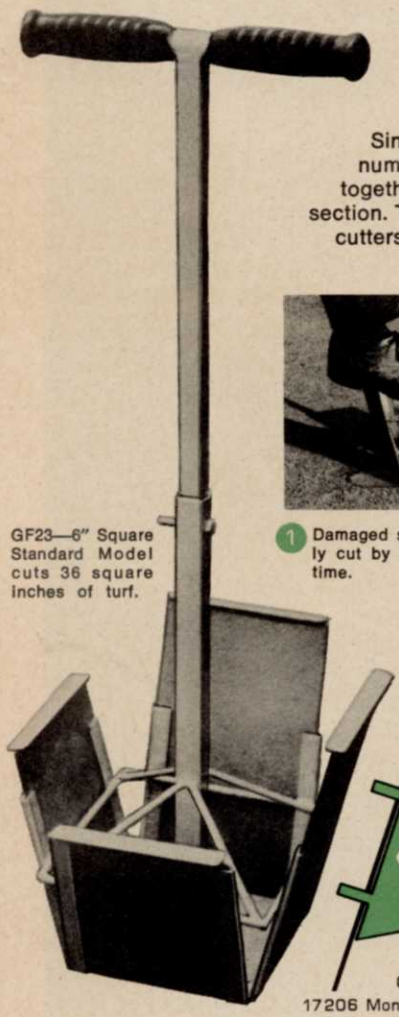
NEW GF23 TURFDOCTOR

CUTS WEDGE-SHAPED SQUARE SODS FOR PATCHING SMALL AREAS

The most efficient tool for replacing worn or damaged turf. Ideal also for renovation work on golf tees and greens.

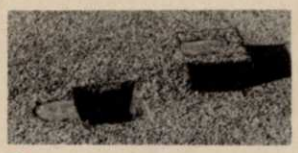
Razor-sharp edges of blades ensure the absolute minimum disturbance to the root structure . . . transplanted turf maintains normal growth and is ready to use immediately.

Since the cuts are "wedge" shape, any required number of adjacent square sods can be matched together perfectly to completely replace damaged section. This eliminates the overlap required with round cutters. Exact depth cut each time prevents scalping and eliminates need for top dressing.



GF23—6" Square Standard Model cuts 36 square inches of turf.

1 Damaged section of turf neatly cut by blades . . . one at a time.



2 Wedge-shaped sod lifts out cleanly.

3 To be replaced by matching wedges of new sod . . . smooth enough to putt on immediately.

Lewis Line

FREE BROCHURE . . .
SEND OR CALL TODAY FOR YOUR COPY

CONTAINER DEVELOPMENT CORPORATION
17206 Montgomery St., Watertown, WI 53094 Phone: 414/261-4030

For More Details Circle (143) on Reply Card

Mauget's Inject-A-Cide B Labelled In 35 States

Inject-A-Cide B, an eco-logical systemic insecticide, is currently registered in 35 states, according to an announcement by the J. J. Mauget Co. It is available for use with the Mauget Tree Injection Process.

The product has been in use by trained arborists for eight years under another label. Reports of benefits derived from regular yearly treatments on persistent problems such as hard scale and gall on oak trees have been received.

Inject-A-Cide B contains technical Bidrin. Current registration includes: elm leaf beetle and European elm scale on elms; aphids on maple, ash and linden; nipple gall psyllid and hackberry psyllid on hackberry; sycamore scale on sycamores; pit-making scale, obscure scale and myzolcallis aphid on oaks; red spider mite, European pine sawfly, southern pine beetle Spp. and pine spittlebug on pines.

Currently, tests are underway in the eastern U.S. to determine the activity of Inject-A-Cide B on gypsy moth. Results of tests during the past two years indicate this method of controlling this pest shows promise.

Label expansion is being sought through an extensive testing program on bronze birch borer, mimosa webworm, tent caterpillars, and various engraver beetles on conifers.

A cautionary statement on the label for Inject-A-Cide B limits applicators to those trained and approved by the J. J. Mauget Co.

Aspon®: never gives a sucker an even break

Insecticide

As chinch bugs invade more turf areas each year, the popularity of Aspon insecticide is growing. Yes, Aspon provides chinch bug control for sure with the least work and worry at low cost. Here's why.

Within 48 hours of application, Aspon knocks out 95 per cent or more of the chinch bugs, even if they are resistant to some insecticides. It puts a quick stop to turf damage. And one spray that lasts 60 to 90 days is usually all you need for the season in the north. Even in the south, you need fewer sprays or granular applications when you use Aspon. There's no chemical damage to the many varieties of turfgrass, and no carryover residue to affect the environment.

Before continued warm weather brings heavy chinch bug attacks, see your local turf products supplier for Aspon. Stauffer Chemical Company, Agricultural Chemical Division, Dept. HD, Westport, CT 06880.

Aspon® from Stauffer CHEMICALS

For More Details Circle (144) on Reply Card

—Advertiser's Index—

Adelphi Kentucky Bluegrass 45
American Sod Producers Assn. 26
Applied Biochemists, Inc. 46
Asplundh Chipper Co. 36
Bombardier 17
Certain-Teed Products Corp. 54
Container Development Corp. 58
Cowbell Seeds 30
Creative Sales Inc. 52
Coursigns, Inc. 38
Deere & Company 29
Diamond Shamrock Chemical Co. 5
Dow Chemical Company 32-33
Elm-R, Inc. 56
FMC Corp., Municipal & Industrial Service Div. 56
Ford Tractor & Implement Operations .....2nd cover
Granberg Industries, Inc. 18
Hancor, Inc. 18
Clifford B. Hannay & Son, Inc. 38
Hyacinth Control Society, Inc. 40
International Harvester Co. 12-13
International Shade Tree Conference 37
International Spike, Inc. 45
Jacklin Seed Co. 9
Jacobsen Mfg. Co. 23
Keltec Inc., Flymo Div. 15
Karl Kummerling, Inc. 44
Lely Corp. 42
Lofts Pedigreed Seed Co. .....4th cover
Merck & Co., Inc. 39
Mobile Aerial Towers, Inc. 43
Moody Sprinkler 40
Mott Corp. 6
Niagara Chemical Div., FMC Corp. 7
Nursery Specialty Products 21
Parker Sweeper 41
Pennwalt Corp. 19
Product Development Int'l 45
Rain Bird Sprinkler Mfg. Corp. .....3rd cover
Servis Equipment Co. 47
Sod-Master, Inc. 21
Spraying Systems Co. 52
Stauffer Chemical Co. 3, 59
Telsco Industries 57
Twin City Seed Co. 28
Union Carbide Corp. 55
U. S. Borax & Chemical Corp. 35
Vermeer Mfg. Co. 48
Wheel Horse Products, Inc. 31

LETTERS TO THE EDITOR

SOME ARE ALERT

This letter is in reference to the editorial "Without A Voice" that was printed in your March, 1973 publication. The issue presented was an implication that matters of importance are being apathetically approached by members of the "Green Industry." Specifically, the Environmental Protection Agency studies and hearings upon the Federal Environmental Pesticide Control Act of 1972.

It might be of interest that in the latter part of February, 1973, Dr. John Weidhaas, president of the International Shade Tree Conference, appointed Mr. Hyland Johns as chairman of a Committee on Pesticides. This Committee was assigned the task of reviewing the Certification Standards of the FEPCA. After receiving comments from his committee, Mr. Johns met with Dr. Weidhaas and Dr. Spencer Davis and subsequently met with Mr. Jim White of EPA in Washington, D. C. The result was an input from members of the International Shade Tree Conference, Inc. which we hope will have some bearing on the Federal draft of Standards.

Your editorial did point out the truth. There is too much complacency in our industry. We do not speak out enough on these matters which are so vital until after legislation, enacted on the spur of the moment and triggered by emotion is then lost or becomes an exceedingly uphill struggle to bring reason into being.

At least your readers should know that not all of the "Green Industry" is asleep. **Jack R. Rogers, Supt. of Street Trees, City of Los Angeles.**

OUR MISTAKE

On page 68 of WEEDS TREES AND TURF for March 1973, there is a report on "Golf Course Builders. . . ." In the article, seventh paragraph, J. J. Kirchdorfer is reported to be saying that ". . . planting seed and water must be an almost simultaneous operation." His statements about "survival rate and time" rank as the number one fallacy of the year.

Seeds of turfgrasses can lie dormant in the soil for weeks and months and, when conditions are right, they germinate and produce turf.

Mr. Kirchdorfer may have alluded to the need for water to be applied quickly after stolons plugs, or sprigs have been planted.

This report cries for a retraction or correction. **Fred V. Grau, executive director, The Pennsylvania Turfgrass Council, Inc.**

Editor's Note: You're quite right, Fred. We checked with J. J. Kirchdorfer as to exactly what he said about survival and irrigation. Mr. Kirchdorfer said that his information came from a Southern Turf Nurseries report. Although their figures were reported correctly, He said that he was referring to stolon survival not seed survival in his speech.

We appreciate your calling this to our attention. We constantly try to get all the facts correctly reported, but one in a while we have a slip up.

Int. Pesticide Applicators To Meet In California

Better personnel and office management, sales promotion and training techniques will highlight the annual conference of the International Pesticide Applicators Association in August.

Dates of the meeting are August 15-18 at the Marriott Inn, Berkeley Marina, Calif. Conference theme is "Professional Productivity."

Keynote speaker will be Henry Engh, owner of a large garden center in Utah and active in the Utah Nurserymen's Association. He will be supported by Gary Ashenbrenner, management consultant from Spokane, Wash., and Norm Ehmens, educational specialist for the Neil A. McLean Co.

Pre-registration fee is $30 per individual or $37.50 per couple. Write to Chuck Bradshaw, convention chairman, 2710 Monument Ct., Concord, Calif. 94522.

Gypsy Moth Sex Scent Studied At U. of Conn.

In an experiment this spring designed to learn more about gypsy moth control, Charles C. Doane of The Connecticut Agricultural Experiment Station will field-test a natural inhibitor of mating produced by female gypsy moths. Scientists

— classifieds —

When answering ads where box number only is given, please address as follows: Box number, c/o Weeds Trees and Turf, 9800 Detroit Ave., Cleveland, Ohio 44102.

Rates: "Position Wanted" 10¢ per word, minimum $3.00. All other classifications 20¢ per word, minimum $4.00. All classified ads must be received by Publisher the 10th of the month preceding publication date and be accompanied by cash or money order covering full payment. Boldface rule box: $25.00 per column inch.

HELP WANTED

HORTICULTURE INSTRUCTOR. Prefer B.S. degree and minimum of 3 years' field experience. Able to teach Turf Management, Pesticide Application, Landscape Design and Construction, and be familiar with operation and servicing of horticultural equipment. Send resume before June 30, 1973, to: Natural Science Division, Edmonds Community College, 20000 68 Ave., West, Lynnwood, Washington 98036.

DISTRIBUTORS for D. J. Andrews, Inc. stump cutter teeth, pockets and bolts. Best wholesale and retail price in U.S.A. Add to this exclusive area, local advertising at our expense, etc., and you have our story. D. J. Andrews, Inc., 17 Silver St., Rochester, N.Y. 14611. Call 716 235-1230, or 716 436-1515.

have learned how to make the material, normally a precursor of the gypsy moth pheromone, or sex attractant.

In tests last year, Dr. Doane and Dr. Ring Cardé of the New York State Agricultural Experiment Station confined scenting female moths in sticky traps. Within 15 minutes, 20 to 40 males were commonly attracted to one scenting female. When a tiny amount of the inhibitor was placed in the trap near the female, males approached but immediately flew away without entering the trap.

This year the inhibitor will be dispersed over a small area to evaluate its ability to prevent mating of females in their natural environment.

Dr. Doane will also continue his research on a virus disease that commonly decimates gypsy moth larvae populations. But it does so after infestations become heavy, which means after a year or two of heavy defoliation.

This year Dr. Doane will introduce the virus artificially into what he has determined is a new infestation, essentially virus-free.

Any one of several outcomes is possible. He may be able to reduce sharply the number of gypsy moth larvae before they have caused excessive defoliation. Or examination of eggs laid by this 1973 generation may show that a high percentage of them are carrying the virus.

POSITIONS WANTED

GROUNDS SUPERINTENDENT or Horticulturist position wanted. M.S. in Ornamental Horticulture plus over 6 years of experience including: planning and supervising a wide variety of landscaping and grounds maintenance projects as well as preparing budgets, purchasing supplies and equipment, and teaching. Resume sent on request. Box 100, Weeds Trees & Turf, 9800 Detroit Ave., Cleveland, Ohio 44102.

DESIRE POSITION as field supervisor with city, county, or state shade tree activity. Five years of first-line supervision in municipal arboriculture. Married, two children. Military obligation complete. Willing to relocate; prefer northern U.S. Resume sent on request. Box 102, Weeds Trees and Turf, 9800 Detroit Ave., Cleveland, Ohio 44102.

MISCELLANEOUS

MR. SOD GROWER:

A few territories are still open for a growers franchise of Warren's A-20 and A-34 Bluegrasses. Both grasses are rated highest by universities doing turfgrass research. For particulars write:

WARREN'S TURF NURSERY
8400 West 111th Street
Palos Park, Illinois 60464

TREE APPRAISALS, SURVEYS, loss evaluations and expert consultation services. For names of members of the American Society of Consulting Arborists, Inc., throughout the country, contact: Executive Director ASCA, 12 Lakeview Ave., Milltown, New Jersey 08850.

SEEDS

LAWN GRASS SEED — Full line including sod-quality Merion, Fylking, bluegrasses, fescues, bentgrasses, ryegrasses, etc.
We specialize in custom mixing.
OLIGER SEED COMPANY
P.O. Box 3765, Akron, Ohio 44314
Phone 216/753-2259

CROWNVETCH SEED: Penngift and Chemung varieties. Direct all inquiries to: Walter C. Mehlenbacher, Castile, New York 14427. Phone 716 493-2553.

ALL VARIETIES, straight or mixed to specifications, bluegrasses, fescues, bents, others. Markell Seeds, P.O. Box 3397, Green Bay, Wisconsin 54303. Phone 414 437-0851.

SOD QUALITY MERION SEED for discriminating growers. Also Fylking, Delta, Park, Newport, Nugget and Pennstar bluegrasses as well as fine fescues. We will custom mix to your specifications. Michigan State Seed Company, Grand Ledge, Michigan 48837. Phone 517 627-2164.

FOR SALE

DOUBLE EDGE sod cutter blades. Will fit any Ryan sod cutter. Works like double edge razor blade. Cuts much more sod per blade. Made to bolt on both ways. $24.00 plus postage. New automatic sod loaders for direct loading to pallets, trucks or trailers. No workers needed on ground. Both products developed and designed by Hadfield. Write or call Glen Hadfield, 4643 Sherwood, Oxford, Michigan 48051. Phone 313 628-2000.

LUCRATIVE TREE BUSINESS for sale in N.W. New Jersey with customers. Will sell all or part. Asplundh 1972 12" Chipper and GMC 1966 Asplundh bucket truck; 1965 International flatbed dump (new engine); 1955 Chevrolet winch truck. Write: Richard Mischiara, 41 Woodside Ave., Newton, N.J. 07860.

PROFITABLE TREE BUSINESS, western Pennsylvania, excellent large clientele. All forms tree care (30 acre nursery optional); also buildings, 2 homes if wanted. Equipment included. Owner assistance if necessary. Reply Box No. 101, Weeds Trees & Turf, 9800 Detroit Ave., Cleveland, Ohio 44102.

ARPS stump cutter teeth, top quality and best price in U.S.A., D. J. Andrews, Inc., 17 Silver St., Rochester, New York 14611. Call 716 235-1230.

USED EQUIPMENT

FOR SALE: Two used 1963 John Beam Model 520 MT self contained spray rigs and tanks. Units are located at Iron River, Michigan. For further details and arrangements to inspect the units contact Mr. Mike Kraus at Wisconsin Michigan Power Co., 1401 S. Carpenter Ave., Iron Mountain, Michigan, Phone 906 774-3000.

FOR SALE: Roseman mowers, 5 gang, $650.00; 7 gang, $900.00; 13 gang, $2,100.00. Ryan sod cutter and cart, $1,550.00. Oliver super fork lift, $2,900. Towmotor fork lift $1,500.00. 130 acre farm with sod, building, etc., $50,000.00. IHC tractor 504, high clearance, wide front, $375. Phone 414 326-5267.

RECONDITIONED brush chippers, sprayers, log splitters, stump routers, bucket trucks. Let us know your needs. Equipment Sales Company, 5620 Old Sunrise Highway, Massapequa, New York 11758. Phone 516 799-7619.

LINDIG SHREDDER FOR SALE, 1969 Model FT30. Original cost $3,658.00. Excellent condition. Will accept best offer. Contact Cut 'N Care Landscape, 3021 Swann Ave., Tampa, Florida 33609.

EDUCATION-BOOKS

LEARN AUTOMATIC IRRIGATION —Complete self-taught course and textbook on fundamentals. Design, operation, maintenance, installation, pipe, equipment. Latest developments in automatic turf and landscape irrigation. New Edition now only $49.50 postpaid. California add tax. Send check, order or request for free outline. Larson Company, P.O. Box 4453, Santa Barbara, Calif. 93103.

trimmings

SHRINK-WRAPPED on pallets is the latest method to deliver environmental protection chemicals. Rohm and Haas Company has just introduced this method in shipping Dithane fungicides and Tok E-25 herbicide to its customers. Weather protection, ease of handling, compactness and other advantages were cited for this packaging feature.

WOODEN POSTS are superior to steel posts as highway guardrail supports, according to recent tests by Forest Service scientists. For machine installation in rocky soils the technologists report that posts made of wood resist damage below the groundline better than steel. Actually, both materials perform well when machine driven. But the potential damage underground prompted the scientists to begin ascertaining just what does go on out of sight. They tested 36 wooden and 26 steel guardrail posts in a rock-filled base that was topped with limestone gravel and shale. Seven steel posts were damaged compared to only two wooden posts.

TREES FOR TODAY AND TOMORROW (TTT) is a program designed to control the spread of Dutch Elm Disease in the Denver area. The action Force on Environment committee of the Denver Chamber of Commerce has contributed $1500 to the program. Last year another $1500 was contributed to TTT to aid in the removal of dead and dying elm trees.

EVERYTHING you ever needed to sell pumps . . . and then some has opened the door for the F. E. Myers & Bro. Co. The latest innovation is a complete line of distinctive business uniforms. A Myers representative can now purchase trousers, jacket, shirts, service suits, coats, raingear, caps, ties and belts through the company. Myers is putting the saying "Clothes Make The Man" into practice.

FIELD BURNING for Oregon seed producers and processors has now been put into a report by Oregon State University. It deals with past and current field burning research conducted by the university. For a copy of the report, write Bulletin Clerk, Oregon State University, Corvallis, Ore. 97331.

IT'S OFFICIAL. The U.S. Department of Commerce says that consumers in 1971 spent close to $1.6 billion on horticultural pursuits. This is about $20 million more than is spent on local trolley, rail and bus transportation and $200 million more than is spent to repair radios and television sets. Figuring 220 million Americans, that's about $7.27 per capita.

ACCIDENTS are caused by people taking chances, according to a recent Ohio survey. One risk too many rates as the highest cause of accidents. In a survey of disabling accidents, operators of machinery cited failure to shut off the power as the major cause. Other reasons given for accidents included hurrying to meet deadlines, thinking about other jobs, being worried or distressed, daydreaming, etc. Mechanical failure was cited in only one accident.

SIBERIAN ELM CANKER studies in South Dakota show canker incidence more severe in the eastern half of the state than elsewhere. In a representative statewide survey in 11 counties, average canker incidence ranges from two percent to 39.8 percent in four-year-old trees. In eight-year-old trees, the disease averaged from 13.5 percent to 77.8 percent. This may severely limit the usefullness of Siberian elms in shelterbelt plantings.

FIVE ACRES OF SAND TRAPS used to keep Dick Vande Walle, superintendent of the Highland Spring Municipal Golf Course high stepping as lively as Fred Astaire. With nearly 218,000 square feet of sand traps to keep in a playable condition, he found little time for more important tasks. Dick discovered a solution to his problem, however, when he purchased a Toro Sandpro. For about $1650 he can rake an average of 15 traps an hour and still have time for a cup of coffee. His machine has three wheels, total hydraulic and is like riding an all terrain vehicle. Dick says the machine "more than pays for itself" in one season.

BROUWER BOOSTS BUSINESS in Canada with a feature story and color picture in the Canada Courier, a tabloid trade paper. The story is about Brouwer's sod harvester and its capabilities. The unit can cut, roll and load up to 1,300 square yards an hour. Just in case you're wondering how many square meters this is, the article reports the figure at 1,086m². In fact, all dimensions are given in standard and metric measurements.

Spray Deodorant For Club Pond

High rainfall in an area near Waukegan, Illinois, caused septic systems to overflow into a small stream serving a one-acre pond averaging 3 feet in depth on the Orchard Hill Country Club. Strong septic odors soon provided an extra hazard on the course. The pond's fish began dying, too.

To clear up the situation, club management opted for a "spray deodorant": potassium permanganate ($KMnO_4$) in a water solution sprayed directly on pond, stream, and banks.

The club called the chemical manufacturer, Carus Chemical Co. of LaSalle, Illinois, for help and a service representative arrived the next day with five kegs of the permanganate. Mixing 40 pounds of it with 200 gallons of water in the club spray unit, the Carus rep, E. H. Puzig, and club Superintendent, Henry Barnes, first sprayed the stream and its banks at the point where it entered club property. The septic odor almost immediately disappeared, leaving only a sweetish residual odor.

The treatment was continued, spraying stream and lake with a total of 400 gallons of solution containing 80 pounds of $KMnO_4$.

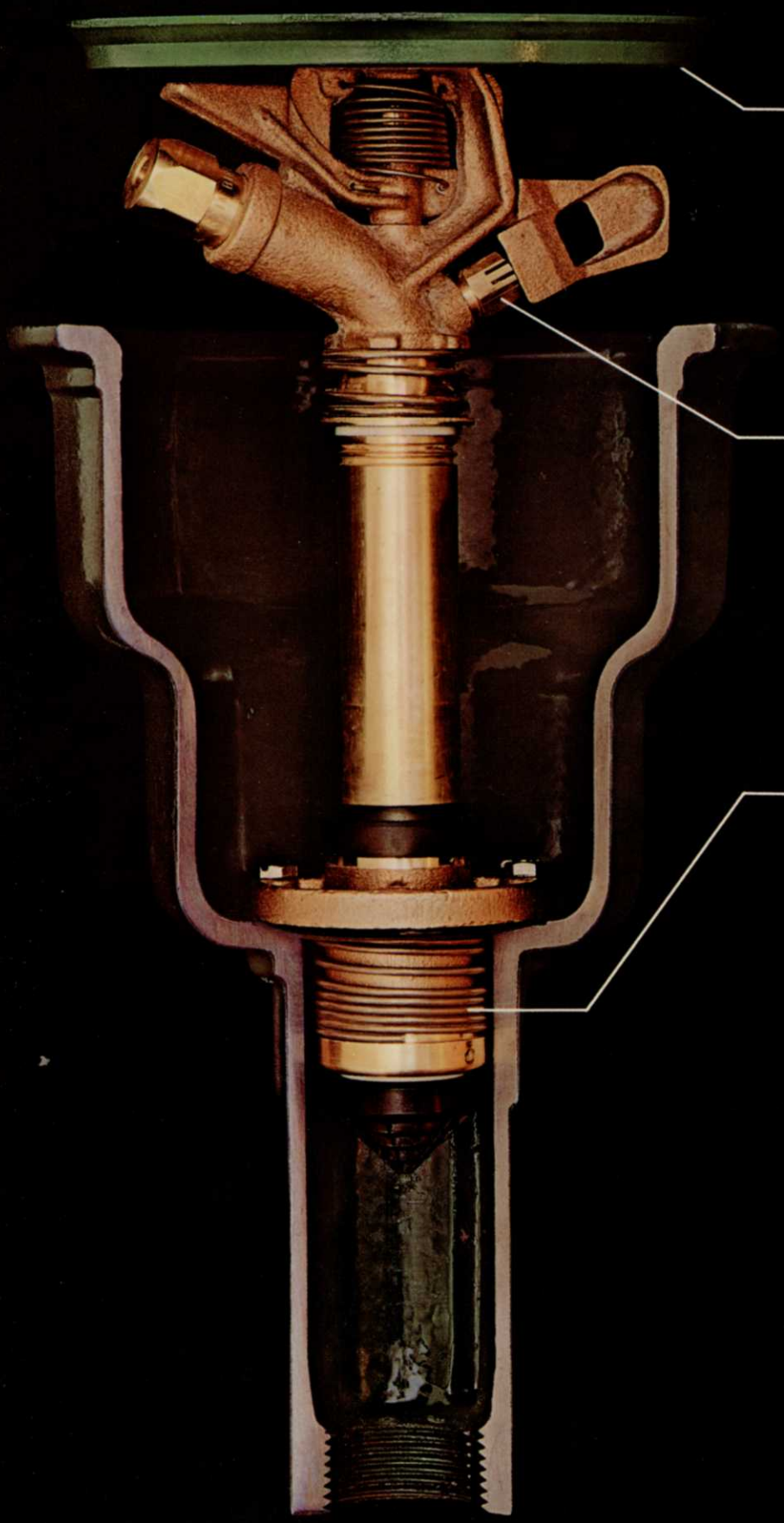
A golf cart inspection tour of the area after treatment by Puzig and Barnes turned up only one spot where odor could still be detected, the point where the stream entered the property. Puzig and Barnes rigged a tank of $KMnO_4$ solution to trickle into the stream there, which was flowing at about 200 gpm.

A check after several days found that the septic odor was completely gone and fish were no longer dying.

Potassium permanganate is an extremely powerful oxident that chemically combines with odorous and toxic materials, altering them to innocuous compounds. Because of its ease of use, immediacy of effect and relative economy, it is finding wider and wider application in air, water and waste treatment practices.

For More Details On Following Page Circle (113) On Reply Card ▶

And the green grass grows all around



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